APR 4 1990

FEM 1.209: 481430

FLOOD INSURANCE STUDY

FORT BEND COUNTY, TEXAS AND CERTAIN POLITICAL DISTRICTS

COMMUNITY NAME	COMMUNITY NUMBER
☐ BIG OAKS MUNICIPAL UTILITY DISTRICT	481596
☐ FORT BEND COUNTY LEVEE IMPROVEMENT DISTRICT NO. 7	481594
☐ FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT NO. 23	481590
☐ FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT NO. 34	481520

COMMUNITY NAME	COMMUNITY NUMBER
☐ FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT NO. 35	481519
☐ FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT NO. 41	481591
☐ UNINCORPORATED AREAS	480228

REVISED:
JUNE 18, 1990

Federal Emergency Management Agency

COMMUNITY NUMBER - 480228

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision (LOMR) process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Flood Insurance Study Effective Date: August 5, 1986

Flood Insurance Study Revised: June 3, 1988
May 3, 1990
June 18, 1990

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PUBLISHED SEPARATELY:

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Flood Insurance Rate Map

FLOOD INSURANCE STUDY
FORT BEND COUNTY, TEXAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the geographic area of Fort Bend County, Texas, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The geographic area of Fort Bend County includes Big Oaks Municipal Utility District (M.U.D.), Fort Bend County Levee Improvement District (L.I.D.) No. 7, Fort Bend County M.U.D. No. 23, Fort Bend County M.U.D. No. 34, Fort Bend County M.U.D. No. 35, Fort Bend County M.U.D. No. 41, and the unincorporated areas of Fort Bend County and is hereinafter referred to collectively as Fort Bend County. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in their efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses in this study represent a revision of the original analyses prepared by Espey, Huston & Associates, Inc., for the Federal Emergency Management Agency (FEMA), under Contract No. H-4569. The work for the original study was completed in April 1980. This study has been revised four times.

In the first revision, the updated hydrologic and hydraulic analyses for the Brazos River were prepared by Espey, Huston & Associates, Inc. The work for the first revision was completed in May 1985.

In the second revision, updated hydrologic and hydraulic analyses for portions of Dry Creek were prepared by Lichliter/Jameson & Associates, Inc., under agreement with FEMA. The work for the second revision was completed in April 1987.

In the third revision, updated hydrologic and hydraulic analyses for Clodine Ditch were prepared by Vansickle, Mickelson & Klein, Inc. The work for the third revision was completed in October 1988.

In this revision, updated hydrologic and hydraulic analyses for Red Gully were prepared by Lichliter/Jameson & Associates, Inc. The work for the fourth revision was completed in May 1989.

1.3 Coordination

On May 12, 1978, streams requiring detailed study were identified at an initial Consultation and Coordination Officer's (CCO) meeting attended by representatives of FEMA, Fort Bend County, Espey, Huston & Associates, Inc. (the study contractor), the Galveston District of the U. S. Army Corps of Engineers (COE), the Texas Department of Water Resources, and other Federal, State, and local agencies. On June 11, 1984, the results of the original study were reviewed at a final CCO meeting attended by representatives of FEMA, the county, and the study contractor.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the geographic areas of Fort Bend County, Texas. The following areas were not included in this study: Fort Bend County L.I.D. No. 2, Fort Bend County M.U.D. No. 2, Fort Bend County M.U.D. No. 25, the City of Fulshear, the City of Houston, the City of Katy, the Town of Kendleton, Kingsbridge M.U.D., the City of Meadows, the City of Missouri City, the City of Needville, the City of Richmond, the City of Rosenberg, the Village of Simonton, the City of Stafford, and the City of Sugar Land. The area of study is shown on the Vicinity Map (Figure 1).

The following tabulation shows the limits of study (and limits of revised study) for the flooding sources studied by detailed methods.

Stream	Limits of Detailed Study
Brazos River	For its entire length within the county
Clear Creek	From a point approximately 700 feet downstream of the downstream county boundary to a point approximately 1.05 miles upstream of FM 2234

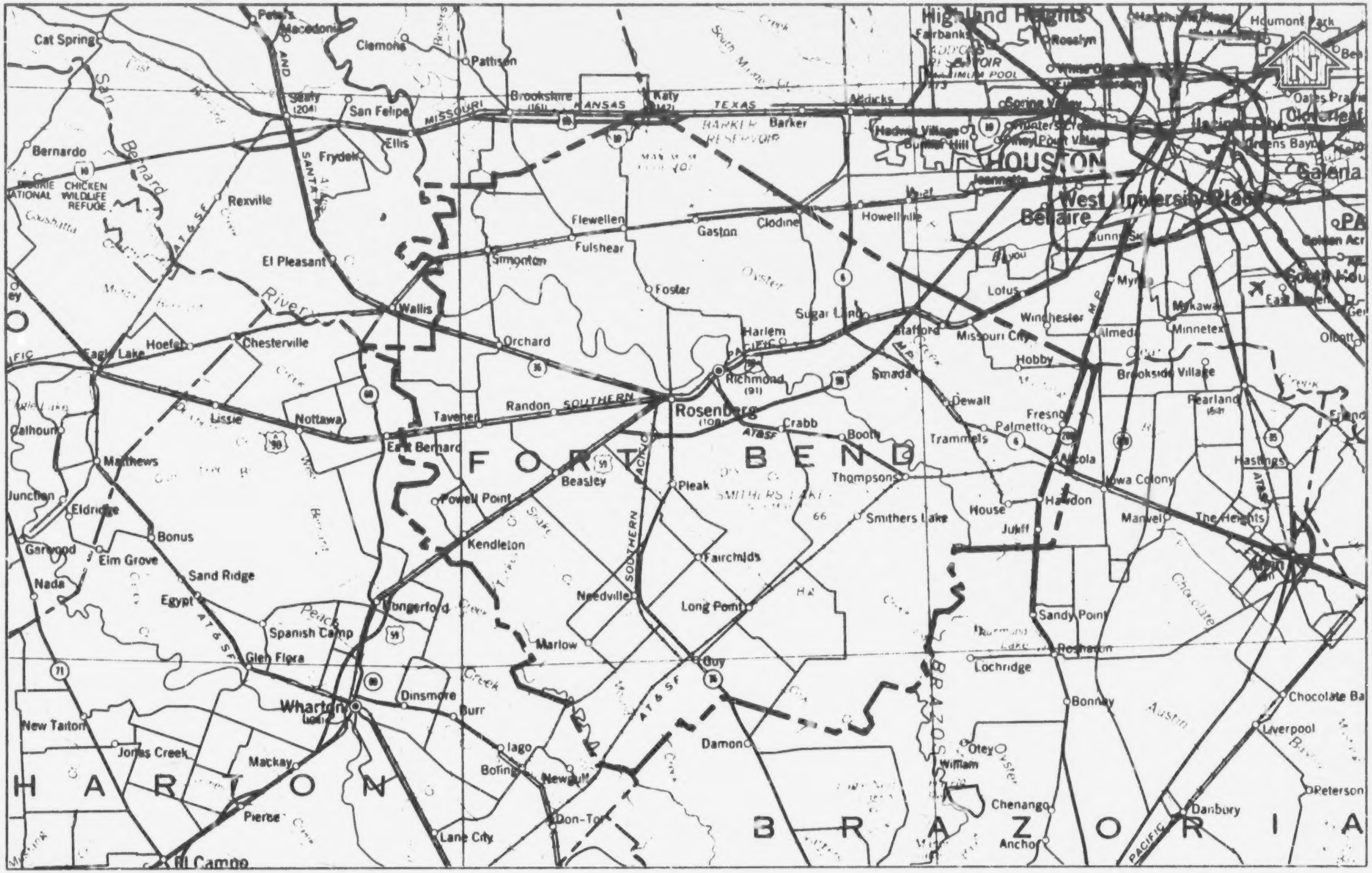

Cat Spring
Peters
Macedonia
Clemons
Pattison
Sealy
(2041)
San Felipe
Brookshire
(1611)
Katy
(1421)
Addicks
Highland Heights
Fairbanks
Roslyn
Houmont Park
Bernardo
Frydek
Ellis
MISSOURI
KANSAS
TEXAS
BARKER RESERVOIR
Barker
Hedwig Village
Bunker Hill
HOUSTON
Oates Prairie
Cloverleaf
Galena
Bellaire
West University Place
PRAIRIE CHICKEN NATIONAL WILDLIFE REFUGE
Rexville
El Pleasant
Flewellen
Fulshear
Gaston
Clodine
Howellville
Simonton
Foster
Wallis
Sugar Land
Harlem
Stafford
Missouri City
Lotus
Winchester
Myrtle
Mykawa
Minnetex
Eagle Lake
Hoefel
Chesterville
Orchard
Richmond
(91)
Smada
Hobby
Almeda
Brookside Village
Pearland
Calhoun
Lissie
Nottawa
Tavener
Randon
SOUTHERN
Rosenberg
(1008)
Crabb
Booth
Dewalt
Fresno
Palmetto
Trammels
East Bernard
FORT BEND
Beasley
Pleak
Thompsons
Arcola
Iowa Colony
Hastings
Matthews
Junction
Eldridge
Powell Point
SMITHERS LAKE
Smithers Lake
House
Juliff
Hawdon
Manvel
The Heights
Bonus
Garwood
Elm Grove
Nada
Kendleton
Fairchilds
Sand Ridge
Egypt
Needville
Long Point
Hungerford
Spanish Camp
Sandy Point
Marlow
Rosharon
Glen Flora
Lochridge
Guy
BRAZOS
Wharton
Dinsmore
Burr
Bonney
Chocolate Bay
New Taiton
Liverpool
Jones Creek
Iago
Damon
Otey
William
Mackay
Boling
Newgulf
WHARTON
Chenango
Peterson
Pierce
Don-Tol
Danbury
Lane City
Anchor
BRAZORIA
El Campo
PACIFIC
AT & SF
SANTA FE
N

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

APPROXIMATE SCALE

8 0 8 16 24 MILES

VICINITY MAP

Stream	Limits of Detailed Study
Clodine Ditch	From the downstream county boundary to a point approximately 3.15 miles upstream of Harlem Road
Coon Creek	From a point approximately 130 feet downstream of Band Road to Randon Road
Cow Creek	From its confluence with the Brazos River to a point approximately 7.38 miles upstream
Dry Creek	From the downstream face of Berdett Road to 150 feet upstream of the City of Rosenberg corporate limits
Keegans Bayou	From the downstream county boundary to a point approximately 0.9 mile upstream of Gaines Road
Little Prong Buffalo Bayou	From its confluence with Willow Fork Buffalo Bayou to a point approximately 2.5 miles upstream
Long Point Creek	From Briscoe Canal to a point approximately 2,900 feet upstream of Trammel-Fresno Road
Long Point Creek East Fork	From its confluence with Long Point Creek to a point approximately 0.7 mile upstream of Trammel-Fresno Road
Mustang Bayou	From the downstream county boundary to a point approximately 5.4 miles upstream of Evergreen Road
Oyster Creek	From approximately 0.45 mile upstream of Blair Road to the downstream side of Shiner Road and from approximately 950 feet upstream of Shiner Road to approximately 300 feet downstream of its confluence with Jones Creek
Red Gully	From its confluence with Oyster Creek to Old Richmond Road and from approximately 0.66 mile upstream of Old Richmond Road to FM 1464

Stream	Limits of Detailed Study
Seabourne Creek	From a point approximately 2,050 feet downstream of State Route 36 to the upstream side of Kroesene Road
Stafford Run	From the downstream county boundary to a point approximately 0.7 mile upstream of Avenue E
Willow Fork Buffalo Bayou	From a point approximately 1.5 miles downstream of the confluence of Little Prong Buffalo Bayou to the upstream county boundary.

A sheet flow area on the south side of the Brazos River upstream of U. S. Route 59 in the area of Crabb River Road was also studied by detailed methods. In the second revision, Dry Creek was the subject of a more detailed analysis that extended the downstream limit of detailed study to Berdett Road. The third revision was carried out in order to study the effects of a channelization project on Clodine Ditch. The fourth revision was carried out to reflect the effects of a channelization project on Red Gully. In addition, the fourth revision includes map changes to reflect a previously issued Letter of Map Revision, dated July 6, 1989, for Fort Bend County L.I.D. No. 10 and No. 11. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

The San Bernard River, Turkey Creek, Snake Creek, Cottonwood Creek, Buffalo Creek, Fairchilds Creek, Big Creek, Deer Creek, Cedar Creek, Bessies Creek, Brookshire Creek, Bullhead Bayou, Jones Creek, Rabbs Bayou, and the remaining portions of Coon Creek, Seabourne Creek, Clear Creek, Dry Creek, Long Point Creek, Oyster Creek, and Red Gully were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Fort Bend County.

2.2 Community Description

Fort Bend County is located in the southeastern portion of Texas. It is bordered by the unincorporated areas of Waller County to the north, the unincorporated areas of Wharton County to the south and west, the unincorporated areas of Harris County to the north and east, the unincorporated areas of Brazoria County to the south and east, and the unincorporated areas of Austin County to the west. The populations of the geographic areas of Fort Bend County are as follows:

Community	Population
Fort Bend County	130,962[1]
Big Oaks M.U.D.	2[2]
Fort Bend County L.I.D. No. 7	8[3]
Fort Bend County M.U.D. No. 23	80[4]
Fort Bend County M.U.D. No. 34	220[5]
Fort Bend County M.U.D. No. 35	4[5]
Fort Bend County M.U.D. No. 41	90[5]
City of Fulshear	594[6]
City of Needville	1,417[6]

[1] 1980 population estimate (Reference 1)
[2] 1986 population estimate (Reference 2)
[3] 1985 population estimate (Reference 3)
[4] 1986 population estimate (Reference 4)
[5] 1980 population estimate (Reference 5)
[6] 1980 population estimate (Reference 6)

The City of Rosenberg also lies in Fort Bend County.

The topography of Fort Bend County is relatively flat, except for the changes in elevation along the channels of the streams. This type of topography is typical of the Texas Coastal Region. Soils in the county are predominantly impervious clay.

Temperatures range from 73 degrees Fahrenheit (°F) to 92°F in the summer and from 45°F to 65°F in the winter. Rainfall occurs during intense local thunderstorms of short duration, general storms extending over periods of several days, and hurricanes and other tropical disturbances. The normal annual precipitation is 44 inches (Reference 7).

2.3 Principal Flood Problems

Reports on historic flooding show that major storms or floods in the area occurred in 1899, 1900, 1913, 1915, and 1929. The flood of 1899 and the storm of 1900 caused much damage to Fort Bend County. Crops, stock, and lives were lost during these two events. The City of Richmond suffered some of the greater losses. Four to five feet of water was seen for several days, and in some places for a stretch of land seven miles wide. The floods of 1913 and 1929 left water covering large portions of the Cities of Rosenberg and Richmond. It was reported that during the 1913 flood, the waters of the Brazos, San Bernard, and Colorado Rivers met below Rosenberg.

Gaging stations are located on the Brazos River at Richmond, Rosenberg, and Juliff (Reference 7).

2.4 Flood Protection Measures

Diversion from Oyster Creek to the Brazos River by way of Brooks Lake, which is located at the intersection of State Route 59 and State Route 6, and to Jones Creek north of Richmond has reduced flooding along Oyster Creek.

Keegans Bayou was channelized in 1984 (Reference 8). The channelization provides protection against the 100-year flood from Keegans Bayou in Fort Bend County.

Levees are located on the Brazos River just below the City of Missouri City and around Pecan Grove M.U.D. There is also a levee on Oyster Creek in Fort Bend L.I.D No. 2. FEMA requires a minimum of 3 foot freeboard to be considered a safe flood protection structure. The levees in Fort Bend County meet the FEMA requirement.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the county.

The 10-, 50-, 100-, and 500-year discharges for the Brazos River were determined using a frequency curve developed from data collected at the Richmond, Texas, gaging station in accordance with Bulletin 17B (Reference 9). The computed flows were then adjusted for the specific frequencies using the COE HEC-1 flood hydrograph computer program (Reference 10). The methodologies used in the 100-year flood determination are presented in a 1984 report by the study contractor (Reference 11).

The 100-year flood for Oyster Creek was determined using a regionalized methodology developed by the U. S. Geological Survey (USGS) (Reference 12). Flows were adjusted using Soil Conservation Service (SCS) TR-55 channel slope adjustment factors to account for the mild slope of Oyster Creek (Reference 13). Flow diversions from Oyster Creek were determined from available information. Discharges for Oyster Creek are affected by storage.

In the third revision, the 10-, 50- and 100-year flood discharges for the lower portion of Clodine Ditch were determined from a synthetic hydrograph analysis developed by Vansickle, Mickelson & Klein, Inc., using the COE HEC-1 computer program (References 14 and 10). The 500-year flood discharges were extrapolated from the values for the lower-frequency floods. Discharges for the upper portion of Clodine Ditch, which has a drainage area of less than 5.25 square miles, were determined using USGS Water-Resources Investigations 3-73 (Reference 15).

The 100-year discharges for Keegans Bayou were determined from a synthetic hydrograph analysis developed by Turner, Collie & Braden, Inc., using the COE HEC-1 computer program (References 8 and 10). The 10-, 50-, and 500-year discharges were not computed when this study was done.

For Cow Creek and Mustang Bayou, the 10-, 50-, and 100-year floods were calculated using a regionalized methodology developed by the USGS (Reference 12). For the remaining streams studied by detailed methods, the 10- and 100-year floods were also calculated using the regionalized methodology developed by the USGS (Reference 12). The 500-year floods were extrapolated from the lower frequency values. Drainage areas were determined from USGS topographic maps (Reference 16). Degree of development was determined from available maps and verified by field investigation.

In the second revision, the 10-, 50-, and 100-year discharges for the revised portion of Dry Creek were determined using USGS Water Resources Investigation 3-73 (Reference 15). The 500-year discharges were derived by extrapolating the 10-, 50-, and 100-year discharges on log probability paper.

In the fourth revision, the 10-, 50-, 100-, and 500-year discharges for Red Gully were calculated using methodologies developed by the Fort Bend County Drainage District, using the COE HEC-1 computer program (References 17 and 10).

A summary of drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
BRAZOS RIVER					
Approximately 5.6 miles upstream of Atchison, Topeka, and Santa Fe Railway	21,380[1]	101,000	157,000	181,000	242,000
CLEAR CREEK					
Approximately 0.42 mile downstream of State Route 288	5.71	900	*	1,500	2,200
At FM 2234	4.81	800	*	1,300	1,800
Approximately 0.62 mile upstream of FM 2234	3.60	550	*	950	1,400
CLODINE DITCH					
At FM 1093	9.62	797	1,157	1,287	1,650
At Harlem Road	7.33	594	855	962	1,240
Approximately 1.35 miles upstream of Harlem Road	5.25	401	577	683	890
COON CREEK					
At Band Road	14.85	1,250	*	2,400	3,750
Approximately 0.28 mile upstream of the Southern Pacific Railroad	11.70	1,100	*	2,000	3,150
Approximately 0.29 mile upstream of Cottonwood Road	10.00	1,000	*	1,700	2,450
COW CREEK					
Approximately 0.47 mile upstream of its confluence with the Brazos River	61.00	3,600	5,900	6,900	9,100

[1] Area below Possum Kingdom Reservoir; area above reservoir determined non-contributary to 100-year flood

* Data not computed

TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-YEAR	50-YEAR	100-YEAR	500-YEAR
DRY CREEK					
At Berdett Road	12.5	1,977	2,779	3,356	4,100
At Ricefield Road	9.0	1,693	2,461	2,795	3,650
At FM 2977	8.5	1,644	2,388	2,700	3,500
Approximately 1,180 feet downstream of Bryan Road	3.88	1,150	1,600	1,800	2,400
Approximately 1,920 feet upstream of Bryan Road	3.53	1,050	1,500	1,650	2,000
KEEGANS BAYOU					
At Keegans Road	8.18	*	*	3,619	*
At Belknap Road	3.68	*	*	1,842	*
At Gaines Road	1.88	*	*	923	*
LITTLE PRONG BUFFALO BAYOU					
At its confluence with Willow Fork Buffalo Bayou	1.01	780	*	1,400	2,200
At unimproved road just upstream of canal	0.95	740	*	1,300	2,000
LONG POINT CREEK					
At Briscoe Canal	6.56	640	*	1,200	1,750
At State Route 6	5.53	500	*	950	1,495
LONG POINT CREEK EAST FORK					
At its confluence with Long Point Creek	1.29	140	*	260	400
MUSTANG BAYOU					
At the downstream county boundary	8.96	779	1,072	1,174	1,448
At the Missouri-Pacific Railroad	8.32	758	960	1,120	1,380
Approximately 0.15 mile upstream of Evergreen Road	6.26	682	920	1,010	1,250
Approximately 2.42 miles upstream of Evergreen Road	5.17	642	840	940	1,150
Approximately 4.95 miles upstream of Evergreen Road	1.99	264	300	314	344

*Data not computed

TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-YEAR	50-YEAR	100-YEAR	500-YEAR
OYSTER CREEK					
Approximately 0.2 mile upstream of Lester Road	33.3	*	*	1,800	2,100
Approximately 1.5 miles upstream of the downstream crossing of the Missouri-Pacific Railroad	29.1	*	*	800	900
Approximately 0.78 mile upstream of U. S. Route 59	28.0	*	*	1,330	*
At Oyster Creek Drive	26.2	*	*	2,282	3,430
At U. S. Route 90 Alternate	26.1	*	*	2,262	3,400
At access road approximately 0.58 mile upstream of upstream crossing of the Missouri-Pacific Railroad	24.5	*	*	1,950	2,800
At access road approxi- 1.7 miles upstream of upstream crossing of the Missouri-Pacific Railroad	20.6	*	*	975	1,755
Approximately 0.65 mile upstream of State Route 6	15.2	*	*	700	1,250
At Shiner Road	7.0	*	*	350	600
RED GULLY					
At its confluence with Oyster Creek	5.70	1,005	1,368	1,561	2,180
Approximately 17,500 feet upstream of its confluence with Oyster Creek	1.09	603	890	1,030	1,473
SEABOURNE CREEK					
Approximately 0.4 mile downstream of State Route 36	4.66	1,050	*	1,650	2,050
Approximately 0.13 mile downstream of State Route 36	3.63	850	*	1,400	1,580

*Data not computed

TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-YEAR	50-YEAR	100-YEAR	500-YEAR
SEABOURNE CREEK (continued)					
Approximately 0.28 mile upstream of State Route 36	3.34	800	*	1,300	1,500
Approximately 0.29 mile downstream of State Route 59	2.41	550	*	900	1,200
Approximately 0.13 mile upstream of the Southern Pacific Railroad	1.75	460	*	710	840
At Old U. S. Route 59	0.99	125	*	220	350
At Kroesene Road	0.39	54	*	95	120
STAFFORD RUN					
Approximately 0.21 mile upstream of its confluence with Oyster Creek	5.33	1,650	*	2,600	3,700
Approximately 0.27 mile upstream of Cartwright Road	4.61	1,300	*	2,000	2,750
Approximately 0.32 mile downstream of Fifth Street	3.83	1,050	*	1,650	2,250
Approximately 0.07 mile upstream of System A Canal	2.09	625	*	1,000	1,450
At FM 1092	1.28	450	*	680	900
WILLOW FORK BUFFALO BAYOU					
Approximately 1.59 miles downstream of the confluence of Little Prong Buffalo Bayou	82.89	8,000	*	14,500	22,000
Approximately 0.19 mile upstream of the confluence of Little Prong Buffalo Bayou	66.01	6,600	*	11,700	17,500
Approximately 1.03 miles downstream of Greenbush Road	59.95	6,050	*	11,100	16,000
Approximately 0.21 mile upstream of Greenbush Road	58.58	6,000	*	11,000	15,850

*Data not computed

TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-YEAR	50-YEAR	100-YEAR	500-YEAR
WILLOW FORK BUFFALO BAYOU (continued)					
Approximately 1 mile downstream of Crossover Road	54.48	5,700	*	10,400	14,200
Approximately 1.05 miles upstream of Crossover Road	32.40	4,000	*	7,000	10,000
Approximately 0.59 mile upstream of FM 1463	18.37	2,600	*	4,500	6,750
Approximately 1.88 miles upstream of FM 1463	17.61	2,550	*	4,400	6,500

*Data not computed

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross section data for the streams studied by detailed methods were obtained from USGS topographic maps (Reference 16). Cross sections were located at close intervals upstream and downstream of bridges and culverts in order to compute the significant backwater effects of these structures. All bridges and culverts were field surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE HEC-2 step-backwater computer program (Reference 18). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Starting water-surface elevations for the streams studied by detailed methods, except for Willow Fork Buffalo Bayou, were calculated by the slope/area method. Starting water-surface elevations for Willow Fork Buffalo Bayou were obtained by critical depth computations.

Channel roughness coefficients (Manning's "n") used in the hydraulic computations were estimated on the basis of field observation. The channel "n" and overbank "n" values for the streams studied by detailed methods are shown in the following tabulation:

Stream	Channel "n"	Overbank "n"
Brazos River	0.023-0.025	0.012-0.060
Clear Creek	0.012-0.050	0.060
Clodine Ditch	0.015-0.035	0.070
Coon Creek	0.040-0.070	0.100
Cow Creek	0.045-0.055	0.057-0.100
Dry Creek	0.035-0.045	0.050-0.075
Keegans Bayou	0.040-0.150	0.100
Little Prong Buffalo Bayou	0.050	0.120
Long Point Creek	0.060	0.120-0.140
Long Point Creek East Fork	0.060	0.120
Mustang Bayou	0.060-0.065	0.120-0.130
Oyster Creek	0.040	0.060
Red Gully	0.035-0.050	0.120
Seabourne Creek	0.040-0.050	0.060
Stafford Run	0.023-0.040	0.100
Willow Fork Buffalo Bayou	0.040-0.050	0.120

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Approximate water-surface elevations for Bessies Creek and Oyster Creek were obtained from normal depth computations. For Long Point Creek, Brookshire Creek, Dry Creek, and Rabbs Bayou, approximate water-surface elevations were obtained from average depth computations. For Jones Creek, approximate water-surface elevations were calculated by the slope/area method.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing floodplain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the county. For each stream studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps (References 16, 19 and 20).

For the streams studied by approximate methods, the boundaries of the 100-year floodplain were delineated using the previously printed Flood Insurance Study for the Fort Bend County and Certain Political Districts (Reference 21).

The 100- and 500-year floodplain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

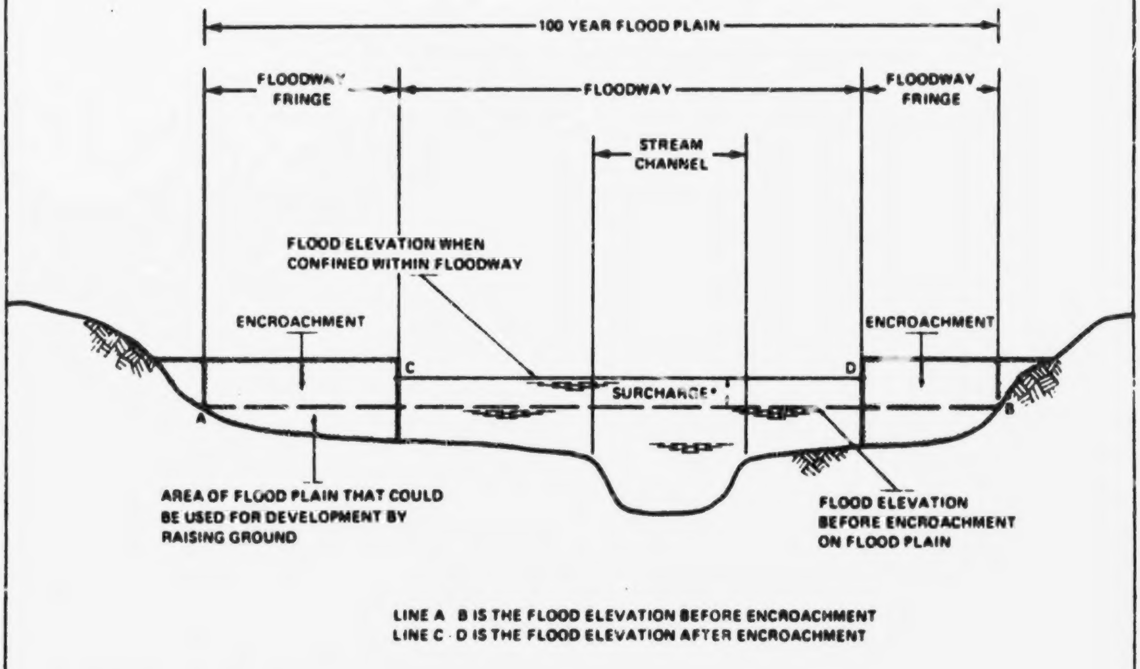
Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the floodplain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

Portions of the floodway widths for the Brazos River, Cow Creek, Mustang Bayou, Oyster Creek, Stafford Run, and Willow Fork Buffalo Bayou extend beyond the county boundary.

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C D IS THE FLOOD ELEVATION AFTER ENCROACHMENT

*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FLOODWAY SCHEMATIC Figure 2

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 2 for certain downstream cross sections of Cow Creek are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Brazos River								
A	55.31	4,059[2]	53,274	2.6	53.4	53.4	54.4	1.0
B	56.49	7,576[2]	79,426	1.8	53.6	53.6	54.6	1.0
C	57.07	656[2]	19,871	7.0	53.6	53.6	54.3	0.7
D	57.78	3,843[2]	42,563	3.3	54.3	54.3	55.2	0.9
E	58.54	3,054[2]	29,446	4.8	54.7	54.7	55.6	0.9
F	59.68	5,745[2]	42,493	3.3	55.7	55.7	56.6	0.9
G	60.75	1,079[2]	20,076	7.0	56.0	56.0	56.9	0.9
H	61.82	8,184[2]	80,782	1.7	57.0	57.0	58.0	1.0
I	62.78	6,628[2]	73,539	2.5	57.2	57.2	58.2	1.0
J	63.49	4,969[2]	37,774	4.8	57.2	57.2	58.2	1.0
K	64.56	13,378[2]	91,981	2.0	58.5	58.5	59.0	0.5
L	65.18	12,163[2]	85,284	2.1	58.8	58.8	59.4	0.6
M	66.68	13,000	103,929	1.7	59.2	59.2	60.2	1.0
N	67.37	9,999	59,973	3.0	59.3	59.3	60.3	1.0
O	68.29	10,840	53,175	3.4	60.4	60.4	61.2	0.8
P	68.94	11,297	88,581	2.0	62.0	62.0	62.8	0.8
Q	69.67	9,497	61,581	2.9	62.2	62.2	63.0	0.8
R	70.40	8,899	83,312	2.2	62.9	62.9	63.7	0.8
S	71.23	7,499	74,348	2.4	63.7	63.7	64.5	0.8
T	72.44	8,450	74,280	2.4	64.9	64.9	65.6	0.7
U	74.66	10,907	98,427	1.8	66.0	66.0	66.8	0.8
V	76.82	11,304	94,354	1.9	67.2	67.2	68.1	0.9
W	77.25	8,353	76,736	2.4	67.3	67.3	68.2	0.9

[1] Miles above confluence with Intracoastal Waterway

[2] This width extends beyond county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

BRAZOS RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Brazos River (continued)								
X	79.77	5,375	35,865	5.0	68.6	68.6	69.5	0.9
Y	80.45	5,300	31,984	5.7	69.7	69.7	70.4	0.7
Z	81.87	3,577	27,609	6.6	71.5	71.5	72.4	0.9
AA	83.18	3,746	47,583	3.8	73.3	73.3	74.3	1.0
AB	83.81	3,937	40,026	4.5	73.6	73.6	74.4	0.8
AC	85.10	1,000	25,734	7.0	75.4	75.4	76.4	1.0
AD	86.91	4,701	62,529	2.9	76.8	76.8	77.8	1.0
AE	87.61	2,880	43,674	4.1	76.9	76.9	77.9	1.0
AF	88.30	4,574	69,659	2.6	77.7	77.7	78.7	1.0
AG	89.55	1,758	31,569	5.7	78.5	78.5	79.5	1.0
AH	90.19	800	24,891	7.3	78.8	78.8	79.8	1.0
AI	91.52	1,184[2]	19,482	9.3	80.2	80.2	81.2	1.0
AJ	92.13	749[2]	20,265	8.9	81.7	81.7	82.5	0.8
AK	92.27	654[2]	19,298	9.4	82.0	82.0	82.8	0.8
AL	92.90	521	19,400	9.3	83.1	83.1	83.7	0.6
AM	94.34	525	18,434	9.8	84.6	84.6	85.4	0.8
AN	94.98	416	17,506	10.3	85.4	85.4	86.1	0.7
AO	95.61	680	24,449	7.4	86.8	86.8	87.5	0.7
AP	96.93	516	22,817	7.9	87.6	87.6	88.4	0.8
AQ	99.56	1,759[2]	24,596	7.4	89.7	89.7	90.3	0.6
AR	100.07	2,254[2]	33,950	5.3	91.1	91.1	91.7	0.6
AS	102.10	2,000	27,714	6.5	91.9	91.9	92.8	0.9

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[1] Miles above confluence with Intracoastal Waterway

[2] This width extends beyond county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

BRAZOS RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Brazos River (continued)								
AT	105.50	3,554	45,753	4.0	94.5	94.5	95.3	0.8
AU	109.90	1,466	38,411	4.7	96.2	96.2	97.2	1.0
AV	110.90	1,079	35,327	5.1	96.8	96.8	97.8	1.0
AW	111.90	634	21,411	8.5	96.9	96.9	97.9	1.0
AX	112.90	682	22,108	8.2	98.1	98.1	99.0	0.9
AY	114.00	900	26,795	6.8	99.5	99.5	100.3	0.8
AZ	117.80	903	28,904	6.3	102.2	102.2	102.9	0.7
BA	118.80	2,565	46,659	3.9	103.0	103.0	103.7	0.7
BB	123.10	6,472[2]	65,259	2.8	106.0	106.0	106.8	0.8
BC	123.80	7,032[2]	84,439	2.1	106.9	106.9	107.9	1.0
BD	124.80	6,053[2]	73,044	2.5	107.2	107.2	108.2	1.0
BE	126.90	2,156[2]	38,334	4.7	108.3	108.3	109.3	1.0
BF	127.70	1,297[2]	27,502	6.6	108.8	108.8	109.8	1.0
BG	135.40	4,277[2]	41,835	4.3	111.9	111.9	112.9	1.0
BH	137.70	7,250[2]	61,646	2.9	114.0	114.0	114.9	0.9
BI	138.60	6,081[2]	52,612	3.4	114.8	114.8	115.7	0.9
BJ	139.60	3,500[2]	27,129	6.7	115.6	115.6	116.4	0.8

[1] Miles above confluence with Intracoastal Waterway

[2] This width extends beyond county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

BRAZOS RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Clear Creek								
A	0.14[1]	1,781	3,580	0.4	62.0	62.0	63.0	1.0
B	0.37[1]	28	221	6.8	62.9	62.9	63.9	1.0
C	0.38[1]	111	438	3.4	63.4	63.4	64.4	1.0
D	0.40[1]	158	661	2.3	63.6	63.6	64.6	1.0
E	0.70[1]	1,526	4,875	0.3	64.8	64.8	65.8	1.0
F	0.95[1]	1,042	2,764	0.5	64.8	64.8	65.8	1.0
G	0.97[1]	1,009	2,874	0.5	64.8	64.8	65.8	1.0
H	0.98[1]	1,014	2,883	0.5	64.8	64.8	65.8	1.0
I	1.18[1]	727	1,937	0.7	64.9	64.9	65.9	1.0
J	2.26[1]	894	1,533	0.8	66.8	66.8	67.7	0.9
K	2.58[1]	768	2,397	0.4	67.0	67.0	67.9	0.9
L	2.95[1]	799	2,833	0.3	68.3	68.3	69.2	0.9
M	3.15[1]	366	1,183	0.8	68.4	68.4	69.3	0.9
N	3.35[1]	247	854	0.6	68.6	68.6	69.5	0.9
Clodine Ditch								
A	6.59[2]	108	848	1.6	91.0	91.0	91.0	0.0
B	6.83[2]	101	843	1.5	91.3	91.3	91.3	0.0
C	7.21[2]	97	755	1.5	91.4	91.4	91.4	0.0
D	7.58[2]	106	895	1.1	91.9	91.9	91.9	0.0
E	7.96[2]	103	793	1.2	92.0	92.0	92.0	0.0
F	8.53[2]	383	785	1.2	92.3	92.3	92.3	0.0
G	9.10[2]	96	714	0.7	92.4	92.4	92.4	0.0
H	9.75[2]	88	389	1.0	92.5	92.5	92.5	0.0
I	10.18[2]	52	204	1.6	92.9	92.9	92.9	0.0
J	10.52[2]	49	202	1.1	94.1	94.1	94.1	0.0

[1] Miles from county boundary

[2] Miles above confluence with Buffalo Bayou

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

CLEAR CREEK - CLODINE DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Coon Creek								
A	0.64	72	364	6.6	81.9	81.9	82.8	0.9
B	0.66	58	364	6.6	82.7	82.7	83.2	0.5
C	0.78	92	426	5.5	85.5	85.5	85.6	0.1
D	1.19	200	786	3.0	89.3	89.3	90.0	0.7
E	1.51	252	1,123	2.1	90.9	90.9	91.7	0.8
F	1.95	300	1,415	1.7	92.1	92.1	93.0	0.9
G	2.20	300	1,195	2.0	92.5	92.5	93.4	0.9
H	2.45	115	1,049	2.2	93.2	93.2	94.0	0.8
I	2.74	300	1,420	1.4	93.8	93.8	94.5	0.7
J	3.09	70	610	3.3	94.7	94.7	95.3	0.6
K	3.37	400	1,225	1.4	95.5	95.5	96.2	0.7
L	3.77	285	837	1.8	96.2	96.2	97.2	1.0

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[1] Miles above confluence with Cottonwood Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

COON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Coon Creek (continued)								
M	4.17[1]	325	1,086	1.4	97.7	97.7	98.3	0.6
N	4.53[1]	355	782	1.9	98.8	98.8	99.4	0.6
O	4.84[1]	355	789	1.9	99.3	99.3	100.3	1.0
P	5.18[1]	125	498	3.0	100.6	100.6	101.3	0.7
Q	5.73[1]	66	469	3.2	102.6	102.6	103.1	0.5
R	5.96[1]	60	501	3.0	103.1	103.1	103.7	0.6
S	6.54[1]	132	696	2.0	105.3	105.3	106.1	0.8
T	6.76[1]	150	761	1.5	106.8	106.8	107.4	0.6
U	6.85[1]	400	1,509	0.8	106.9	106.9	107.6	0.7
V	7.09[1]	500	1,595	0.7	107.0	107.0	107.8	0.8
W	7.45[1]	700	1,388	0.8	107.3	107.3	108.2	0.9
X	7.72[1]	700	2,036	0.6	107.6	107.6	108.4	0.8
Cow Creek								
A	2,480[2]	217[3]	2,084	3.3	53.4	29.6[4]	30.6	1.0
B	5,410[2]	137[3]	1,340	4.6	53.4	32.0[4]	32.5	0.5
C	9,260[2]	94[3]	987	6.3	53.4	35.2[4]	35.4	0.2
D	12,620[2]	120[3]	1,256	4.5	53.4	38.1[4]	38.2	0.1
E	15,320[2]	96[3]	993	5.6	53.4	41.0[4]	41.2	0.2
F	19,070[2]	353[3]	2,072	2.3	53.4	44.4[4]	45.0	0.6
G	23,240[2]	287[3]	1,746	2.5	53.4	46.4[4]	47.3	0.9

[1] Miles above confluence with Cottonwood Creek

[2] Feet above confluence with Brazos River

[3] This width extends beyond county boundary

[4] Elevation computed without consideration of backwater from Brazos River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX.

FLOODWAY DATA

COON CREEK - COW CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Cow Creek (continued)								
H	30,140[1]	309[3]	1,637	2.3	53.4	50.3[4]	51.2	0.9
I	31,140[1]	1,052[3]	4,477	0.8	53.4	50.7[4]	51.6	0.9
J	33,190[1]	450[3]	2,263	1.7	53.4	51.1[4]	52.0	0.9
K	35,260[1]	547[3]	2,489	1.5	53.4	51.9[4]	52.8	0.9
L	37,700[1]	527[3]	2,574	1.5	53.4	52.8[4]	53.7	0.9
M	39,400[1]	628[3]	2,680	1.4	53.4	53.4	54.4	1.0
N	40,680[1]	456[3]	2,353	1.6	53.9	53.9	54.9	1.0
O	42,900[1]	907[3]	4,468	0.9	54.4	54.4	55.4	1.0
Dry Creek								
A	0[2]	138	1,420	2.9	74.1	74.1	75.1	1.0
B	3,000[2]	153	1,475	2.8	75.0	75.0	75.8	0.8
C	5,800[2]	128	1,116	3.4	75.9	75.9	76.5	0.6
D	8,800[2]	116	953	3.9	77.4	77.4	77.8	0.4
E	12,000[2]	112	894	4.2	79.5	79.5	79.7	0.2
F	13,800[2]	110	916	3.7	80.6	80.6	80.7	0.1
G	15,340[2]	109	882	3.9	81.4	81.4	81.5	0.1
H	16,800[2]	76	636	5.2	82.4	82.4	82.5	0.1
I	16,940[2]	122	1,183	2.8	82.8	82.8	82.9	0.1
J	19,840[2]	125	993	3.0	83.8	83.8	83.8	0.0
K	22,840[2]	118	885	2.8	84.8	84.8	84.8	0.0
L	24,640[2]	122	949	2.6	85.3	85.3	85.3	0.0
M	26,240[2]	324	777	2.7	88.9	88.9	89.5	0.6
N	27,440[2]	46	385	4.7	89.7	89.7	90.7	1.0
O	28,563[2]	178	976	1.8	91.2	91.2	91.9	0.7

[1] Feet above confluence with Brazos River

[2] Feet above downstream face of Berdett Road

[3] This width extends beyond the county boundary

[4] Elevation computed without consideration of backwater effects from Brazos River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

COW CREEK -DRY CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Keegans Bayou								
A	35,267	113	999	1.4	85.9	85.9	86.9	1.0
B	35,780	118	1,029	1.3	86.0	86.0	87.0	1.0
C	36,780	114	1,044	1.3	86.1	86.1	87.1	1.0
D	37,780	115	1,017	1.4	86.2	86.2	87.1	0.9
E	38,780	102	912	1.5	86.3	86.3	87.2	0.9
F	48,540	88	671	1.1	87.3	87.3	88.0	0.7
G	49,537	86	645	0.9	87.4	87.4	88.1	0.7

[1] Feet above confluence with Brays Bayou

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

KEEGANS BAYOU

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Keegans Bayou (continued)								
H	50,830[1]	85	623	1.0	87.5	87.5	88.2	0.7
I	51,980[1]	84	605	1.0	87.7	87.7	88.3	0.6
Little Prong Buffalo Bayou								
A	0.71[2]	307	993	1.4	109.5	109.5	110.4	0.9
B	1.00[2]	346	1,220	1.1	111.0	111.0	111.9	0.9
C	1.17[2]	28	211	6.6	111.8	111.8	112.7	0.9
D	1.20[2]	543	2,137	0.6	112.6	112.6	113.6	1.0
E	1.32[2]	479	1,714	0.8	112.8	112.8	113.8	1.0
F	1.58[2]	643	1,870	0.7	113.4	113.4	114.3	0.9
G	1.93[2]	232	787	1.7	114.3	114.3	115.2	0.9
H	2.18[2]	537	1,254	1.0	115.5	115.5	116.5	1.0
I	2.48[2]	525	1,165	1.1	117.2	117.2	118.2	1.0
Long Point Creek								
A	3,010[3]	295	2,019	0.6	60.3	60.3	61.2	0.9
B	5,491[3]	104	665	1.8	61.1	61.1	62.0	0.9
C	6,970[3]	86	555	1.7	63.7	63.7	64.6	0.9
D	8,976[3]	170	975	1.0	64.5	64.5	65.4	0.9

[1] Feet above confluence with Brays Bayou

[2] Miles above confluence with Willow Fork Buffalo Bayou

[3] Feet above Briscoe Canal

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

KEEGANS BAYOU-LITTLE PRONG BUFFALO BAYOU-LONG POINT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Long Point Creek (continued)								
E	10,243[1]	64	393	2.4	65.0	65.0	65.7	0.7
F	11,616[1]	8[illegible]	201	2.8	67.5	67.5	68.2	0.7
G	13,200[1]	43	306	1.8	70.1	70.1	70.6	0.5
H	13,253[1]	300	225	2.5	70.7	70.7	70.7	0.0
I	14,203[1]	184	876	0.6	70.8	70.8	71.0	0.2
J	16,104[1]	233	588	1.0	71.0	71.0	71.3	0.3
Long Point Creek East Fork								
A	1,426[2]	101	125	2.1	66.0	66.0	66.0	0.0
B	1,901[2]	25	78	3.3	68.1	68.1	68.7	0.6
C	1,922[2]	72	317	0.8	69.8	69.8	70.4	0.6
D	2,957[2]	577	1,310	0.2	69.9	69.9	70.7	0.8
E	2,983[2]	577	2,235	0.1	71.7	71.7	72.2	0.5
F	4,224[2]	586	1,600	0.2	71.7	71.7	72.3	0.6
G	6,019[2]	645	1,447	0.2	71.7	71.7	72.3	0.6
H	6,811[2]	113	195	1.3	71.8	71.8	72.5	0.7

[1] Feet above Briscoe Canal

[2] Feet above confluence with Long Point Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

LONG POINT CREEK-LONG POINT CREEK EAST FORK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Mustang Bayou								
A	0.17	400	1,110	1.1	68.4	68.4	69.4	1.0
B	0.57	400	1,251	0.9	69.1	69.1	70.1	1.0
C	0.93	60	377	3.1	70.1	70.1	70.9	0.8
D	0.96	54	418	2.8	71.4	71.4	71.8	0.4
E	0.97	54	428	2.7	71.6	71.6	72.0	0.4
F	1.40	1,248	3,005	0.4	71.9	71.9	72.6	0.7
G	1.61	975	4,060	0.3	71.9	71.9	72.6	0.7
H	1.85	935	3,346	0.3	71.9	71.9	72.7	0.8
I	2.24	1,070	4,019	0.3	72.0	72.0	72.8	0.8
J	2.37	788	3,217	0.3	72.0	72.0	72.9	0.9
K	2.56	500	1,879	0.6	72.1	72.1	73.0	0.9
L	2.71	350	1,642	0.7	72.2	72.2	73.2	1.0
M	3.05	502	1,850	0.5	72.4	72.4	73.4	1.0
N	3.41	245	1,469	0.7	72.7	72.7	73.7	1.0
O	3.60	540	1,999	0.5	72.9	72.9	73.9	1.0
P	4.19	695	2,321	0.4	73.4	73.4	74.3	0.9
Q	4.54	530	2,086	0.5	73.7	73.7	74.5	0.8
R	4.70	723	2,447	0.4	73.8	73.8	74.7	0.9
S	5.15	1,240	3,353	0.3	74.0	74.0	75.0	1.0
T	5.19	1,150	3,299	0.3	74.0	74.0	75.0	1.0
U	5.48	1,300	5,056	0.2	74.1	74.1	75.1	1.0
V	5.78	1,120	2,524	0.4	74.1	74.1	75.1	1.0
W	5.98	1,197	4,936	0.2	74.2	74.2	75.2	1.0

[1] Miles above county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

MUSTANG BAYOU

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Mustang Bayou (continued)								
X	6.00	1,140	5,214	0.2	74.7	74.7	75.5	0.8
Y	6.15	1,070	2,145	0.4	74.7	74.7	75.5	0.8
Z	6.57	2,120	2,649	0.4	75.1	75.1	75.9	0.8
AA	6.86	1,816[2]	5,034	0.2	75.1	75.1	76.0	0.9
AB	7.11	980	3,329	0.3	75.1	75.1	76.0	0.9
AC	7.72	880	2,711	0.1	75.2	75.2	76.1	0.9
Oyster Creek								
A	28.78	314[2]	1,761	0.5	72.4	72.4	72.4	0.0
B	34.10	265	769	1.3	76.2	76.2	76.2	0.0
C	36.48	221	959	0.7	77.9	77.9	77.9	0.0
D	38.62	144	750	0.9	78.6	78.6	78.6	0.0
E	40.18	164	1,059	0.7	79.0	79.0	79.0	0.0
F	41.65	118	710	1.0	79.3	79.3	79.3	0.0
G	43.74	217	763	0.9	80.0	80.0	80.0	0.0
H	47.11	147	716	0.5	81.2	81.2	81.2	0.0

[1] Miles above county boundary

[2] This width extends beyond county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

MUSTANG BAYOU - OYSTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Red Gully								
A	581[1]	114	898	1.7	78.1	78.1	79.1	1.0
B	620[1]	111	882	1.8	78.2	78.2	79.2	1.0
C	7,918[1]	96	684	2.5	79.2	79.2	79.9	0.7
D	9,918[1]	103	785	1.4	80.1	80.1	80.7	0.6
E	11,518[1]	157	1,288	0.9	80.2	80.2	80.8	0.6
F	14,018[1]	2,952	4,965	0.2	82.0	82.0	82.9	0.9
G	17,518[1]	1,748	3,320	0.3	82.8	82.8	83.5	0.7
H	18,848[1]	749	1,673	0.2	83.0	83.0	84.0	1.0
I	19,698[1]	223	255	1.1	83.0	83.0	84.0	1.0
Seabourne Creek								
A	3.74[2]	150	559	2.5	92.6	92.6	93.5	0.9
B	6.19[2]	287	850	0.8	100.9	100.9	101.9	1.0
C	6.56[2]	49	185	1.2	102.2	102.2	102.7	0.5
D	6.60[2]	46	179	1.2	102.2	102.2	103.2	1.0
E	6.80[2]	114	195	1.1	102.7	102.7	103.5	0.8
F	7.14[2]	177	307	0.7	103.1	103.1	104.1	1.0
G	7.44[2]	17	47	2.0	103.6	103.6	104.6	1.0
H	7.49[2]	103	210	0.5	104.1	104.1	104.9	0.8

[1] Feet above confluence with Oyster Creek

[2] Miles above confluence with Big Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

RED GULLY - SEABOURNE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Stafford Run								
A	1.60[1]	90	594	3.4	71.4	71.4	71.9	0.5
B	1.91[1]	70	552	3.0	72.7	72.7	73.2	0.5
C	2.22[1]	98	547	3.0	73.5	73.5	74.1	0.6
D	2.25[1]	139	731	2.3	73.9	73.9	74.6	0.7
E	2.44[1]	129	942	1.4	74.7	74.7	75.5	0.8
F	2.73[1]	219[3]	1,189	0.8	76.5	76.5	77.4	0.9
G	3.25[1]	80	645	1.5	76.9	76.9	77.8	0.9
H	3.46[1]	85	345	2.0	77.1	77.1	78.0	0.9
I	3.47[1]	85	412	1.7	77.9	77.9	78.2	0.3
J	3.64[1]	126	540	1.3	78.4	78.4	79.2	0.8
Willow Fork Buffalo Bayou								
A	4.6[2]	2,371	8,451	1.4	107.4	107.4	108.3	0.9
B	4.8[2]	1,411	4,362	2.7	108.2	108.2	109.1	0.9
C	5.02[2]	984	4,027	2.9	109.8	109.8	110.7	0.9
D	5.28[2]	982	4,286	2.7	111.4	111.4	112.3	0.9
E	5.61[2]	965	3,695	3.2	113.8	113.8	114.7	0.9
F	5.90[2]	931	3,270	3.6	116.0	116.0	116.9	0.9
G	6.14[2]	476	3,321	3.3	117.4	117.4	118.4	1.0

[1] Miles above confluence with Oyster Creek

[2] Miles above county boundary

[3] This width extends beyond county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

STAFFORD RUN - WILLOW FORK BUFFALO BAYOU

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Willow Fork Buffalo Bayou (continued)								
H	6.55	966	1,765	6.3	119.2	119.2	120.2	1.0
I	6.89	774	4,910	2.3	121.2	121.2	122.2	1.0
J	7.20	1,900	6,152	1.8	122.6	122.6	123.5	0.9
K	7.45	2,400	13,759	0.8	124.0	124.0	124.5	0.5
L	8.14	1,932	10,911	1.0	124.5	124.5	125.1	0.6
M	8.59	2,300	9,133	1.1	125.4	125.4	126.0	0.6
N	8.97	2,350	11,497	0.9	126.0	126.0	126.9	0.9
O	9.11	2,200	8,087	1.3	126.3	126.3	127.2	0.9
P	9.23	1,800	7,621	1.4	127.0	127.0	127.8	0.8
Q	9.42	1,444	6,075	1.7	128.5	128.5	129.1	0.6
R	9.68	1,203	5,421	1.9	129.8	129.8	130.5	0.7
S	10.27	1,247	5,356	1.9	132.3	132.3	133.0	0.7
T	10.61	813[2]	5,994	1.2	133.5	133.5	134.4	0.9
U	10.91	1,570	8,563	0.8	134.1	134.1	135.0	0.9
V	11.17	120	1,328	5.3	134.5	134.5	135.4	0.9
W	11.19	120	1,372	5.1	134.9	134.9	135.8	0.9
X	11.39	335	1,672	4.2	137.0	137.0	137.7	0.7
Y	11.70	1,300	4,743	0.9	139.5	139.5	140.5	1.0
Z	12.02	1,400	5,706	0.8	140.1	140.1	141.1	1.0
AA	12.42	700	2,496	1.8	141.3	141.3	142.2	0.9
AB	12.96	1,900	7,328	0.6	142.7	142.7	143.5	0.8

[1] Miles above county boundary

[2] This width extends beyond county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

WILLOW FORK BUFFALO BAYOU

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Willow Fork Buffalo Bayou (continued)								
AC	13.18	1,850	6,517	0.7	143.0	143.0	143.8	0.8
AD	13.48	1,600	3,582	1.2	145.9	145.9	146.1	0.2
AE	13.76	1,791	7,876	0.6	146.2	146.2	146.6	0.4
AF	14.03	2,000	3,627	1.2	146.4	146.4	146.9	0.5
AG	14.21	2,000	4,106	1.1	147.2	147.2	148.2	1.0
AH	14.38	1,450[2]	3,703	1.2	148.1	148.1	149.1	1.0

[1] Miles above county boundary

[2] This width extends beyond county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOODWAY DATA

WILLOW FORK BUFFALO BAYOU

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail in Fort Bend County.

5.1 Reach Determinations

Reaches are defined as sections of floodplain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following tabulation for more than 20 percent of the reach:

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of Fort Bend County are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Brazos River							
Reach 1	230,235, 240,245, 265,270, 425,550	-3.7	-0.7	+2.0	035	A7	Varies
Reach 2	50,75, 200,205, 210,230, 235	-8.0	-1.6	+3.0	080	A16	Varies
Reach 3	50	-4.0	-0.7	+2.5	040	A8	Varies
Sheet Flow Area	230,235, 240	Sheet Flow Area - Average Depth 1 Foot				AO	--
Clear Creek							
Reach 1	280,295	-0.5	*	+0.3	005	A1	Varies

[1] Flood Insurance Rate Map Panel
[2] Weighted Average
[3] Rounded to the nearest foot - see map

*Not computed

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOOD INSURANCE ZONE DATA

BRAZOS RIVER - CLEAR CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Clodine Ditch							
Reach 1	85,105	-2.8	-0.8	+1.7	030	A6	Varies
Reach 2	85	-2.3	-0.7	+1.4	025	A5	Varies
Coon Creek							
Reach 1	200,215, 355	-1.5	*	+0.9	015	A3	Varies
Cow Creek							
Reach 1	525	-1.3	-0.4	+0.6	015	A3	Varies
Dry Creek							
Reach 1	220,240	-2.1	-0.6	+1.3	020	A4	Varies
Keegans Bayou							
Reach 1	120,140	-6.1	*	*	060	A12	Varies
Reach 2	120	-3.1[4]	*	*	030	A6	Varies

[1] Flood Insurance Rate Map Panel
[2] Weighted Average
[3] Rounded to the nearest foot - see map

[4] Computed using approximate 10-year flood elevation
* Not computed

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOOD INSURANCE ZONE DATA

CLODINE DITCH - COON CREEK - COW CREEK
DRY CREEK - KEEGANS BAYOU

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Little Prong Buffalo Bayou							
Reach 1	85	-0.8	*	+0.6	010	A2	Varies
Long Point Creek							
Reach 1	290	-1.1	*	+0.8	010	A2	Varies
Reach 2	290	-1.7	*	+1.5	015	A3	Varies
Reach 3	290	-0.7	*	+0.5	005	A1	Varies
Long Point Creek East Fork							
Reach 1	290	-0.1	*	+0.2	005	A1	Varies
Mustang Bayou							
Reach 1	260,270, 280,290, 295	-0.8	*	+0.4	010	A2	Varies

[1] Flood Insurance Rate Map Panel
[2] Weighted Average
[3] Rounded to the nearest foot - see map

*Not computed

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOOD INSURANCE ZONE DATA

LITTLE PRONG BUFFALO BAYOU-LONG POINT CREEK-LONG POINT CREEK EAST FORK-MUSTANG BAYOU

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD-1973 RELEVELING)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Oyster Creek							
Reach 1	100,115, 120,230, 235,255	-2.0[4]	*	+1.9	020	A4	Varies
Red Gully							
Reach 1	120	-2.4	-0.7	+1.3	025	A5	Varies
Reach 2	120	-0.5	-0.1	+0.4	005	A1	Varies
Seabourne Creek							
Reach 1	215,220	-0.5	*	+0.7	005	A1	Varies
Stafford Run							
Reach 1	260	-1.4	*	+1.0	015	A3	Varies
Reach 2	255,260	-1.9	*	+2.1	020	A4	Varies
Reach 3	255	-0.5	*	+1.5	005	A1	Varies

[1] Flood Insurance Rate Map Panel

[2] Weighted Average

[3] Rounded to the nearest foot - see map

[4] Computed using approximate 10-year flood elevation

* Not computed

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOOD INSURANCE ZONE DATA

OYSTER CREEK - RED GULLY - SEABOURNE CREEK - STAFFORD RUN

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Willow Fork							
Buffalo Bayou							
Reach 1	85,105	-3.0	*	+1.1	030	A6	Varies
Reach 2	15,20,85	-5.5	*	+1.9	055	A11	Varies
Reach 3	15	-3.2	*	+1.1	030	A6	Varies

[1] Flood Insurance Rate Map Panel

[2] Weighted Average

[3] Rounded to the nearest foot - see map

*Not computed

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOOD INSURANCE ZONE DATA

WILLOW FORK BUFFALO BAYOU

number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zone AO:	Special Flood Hazard Areas inundated by types of 100-year shallow flooding where depths are between 1.0 and 3.0 feet; depths are shown but no FHFs are determined.
Zones A1, A2, A3, A4, A5, A6, A7, A8, A11, A12, A16:	Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the community are shown in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Fort Bend County is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

The current Flood Insurance Rate Map presents flooding information for the geographic area of Fort Bend County. Previously, separate Flood Hazard Boundary Maps and/or Flood Insurance Rate Maps were prepared for some of the identified flood-prone, incorporated communities and political districts, and for the unincorporated areas of the county. Historical data relating to the maps prepared for these communities are presented in Table 4, "Community Map History."

6.0 OTHER STUDIES

A Flood Insurance Study has been prepared for the City of Katy (Reference 22). Because it is more current, this study's analysis of Willow Fork Buffalo Bayou is not in agreement with the Katy study's analysis of that stream. A Flood Insurance Study has been prepared for the City of Richmond (Reference 23). Because it is more current, this study's analysis of the Brazos River is not in agreement with the Richmond study's analysis of that river. A Flood Insurance Study has been prepared for the City of Stafford (Reference 24). Because it is more current, this study's analysis of Stafford Run is not in agreement with the Stafford study's analysis of that stream. Flood Insurance Studies have been prepared for the Village of Simonton and the City of Sugar Land (References 25 and 26). The results of this study are in complete agreement with the results of that study.

A Flood Insurance Study is currently being prepared for Harris County and Incorporated areas (Reference 27). This study's analysis of Clear Creek is not in agreement with the Harris County study's analysis of that stream. A Flood Insurance Study is currently being prepared for the City of Houston (Reference 28). This study's analyses of Keegans Bayou, and Willow Fork Bayou are not in agreement with the Houston study's analyses of those streams. A Flood Insurance Study has been prepared for the City of Rosenberg (Reference 29). This study's analysis of the Brazos River is not in agreement with the Rosenberg study's analysis of that river. A Flood Insurance Study has been prepared for Brazoria County and Incorporated Areas (Reference 30). The results of this study are in complete agreement with the results of that study.

Due to its more detailed nature, this Flood Insurance Study supersedes the previously printed Flood Insurance Study for Fort Bend County and Certain Political Districts (Reference 21).

7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, the Natural and Technological Hazards Division, Federal Regional Center, 800 North Loop 288, Denton, Texas 76201-3698.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
BIG OAKS M.U.D.	NOVEMBER 9, 1985		AUGUST 5, 1986	
FORT BEND COUNTY L.I.D. NO. 7	SEPTEMBER 6, 1985		AUGUST 5, 1986	
FORT BEND COUNTY M.U.D. NO. 23	JUNE 11, 1985		AUGUST 5, 1986	
FORT BEND COUNTY M.U.D. NO. 34	SEPTEMBER 10, 1984		AUGUST 5, 1986	
FORT BEND COUNTY M.U.D. NO. 35	JULY 20, 1984		AUGUST 5, 1986	
FORT BEND COUNTY M.U.D. NO. 41	JUNE 27, 1985		AUGUST 5, 1986	JUNE 18, 1990

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
UNINCORPORATED AREAS	JULY 9, 1976	DECEMBER 20, 1977	AUGUST 5, 1986	JUNE 3, 1988 MAY 3, 1990 JUNE 18, 1990

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

COMMUNITY MAP HISTORY

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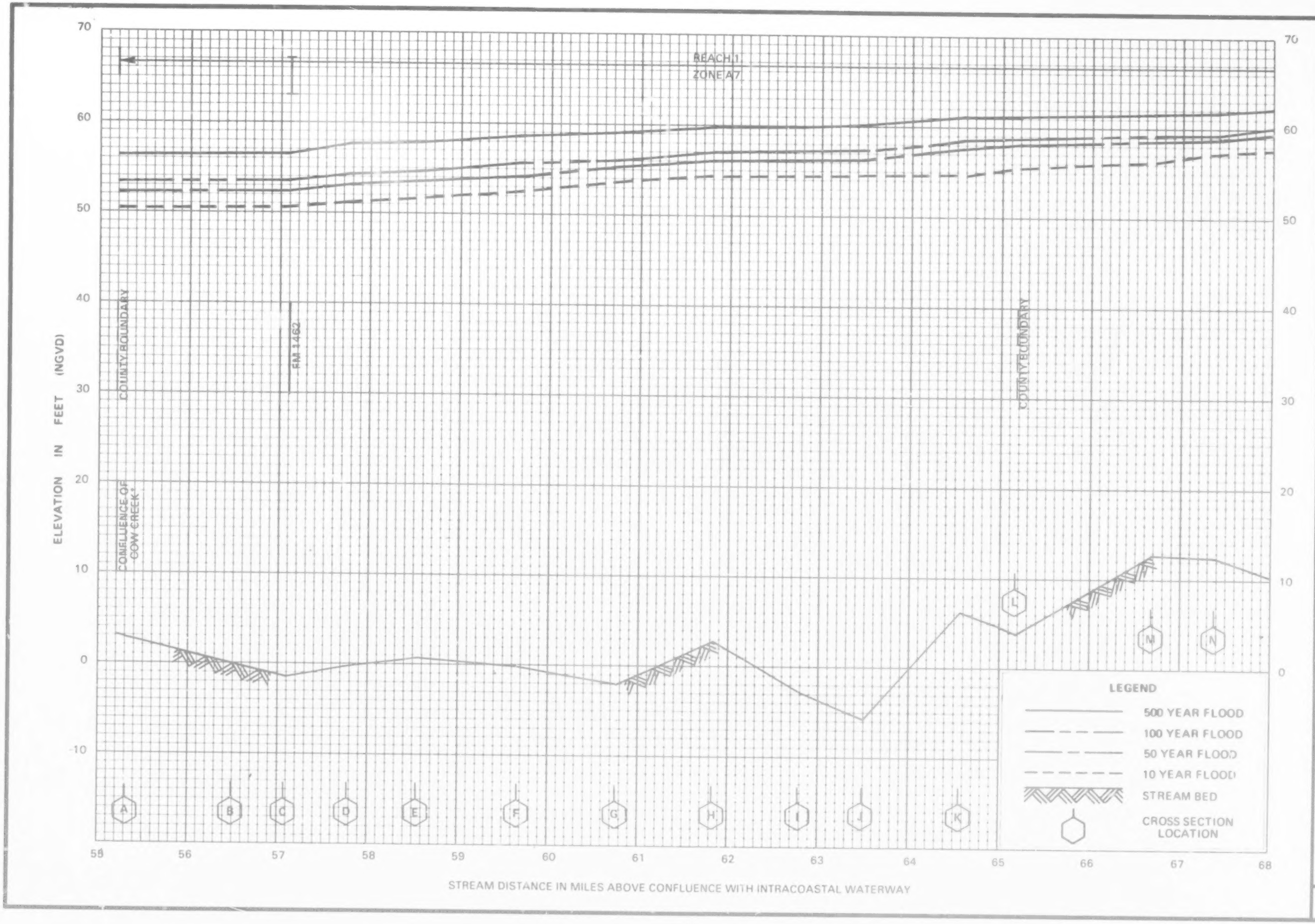
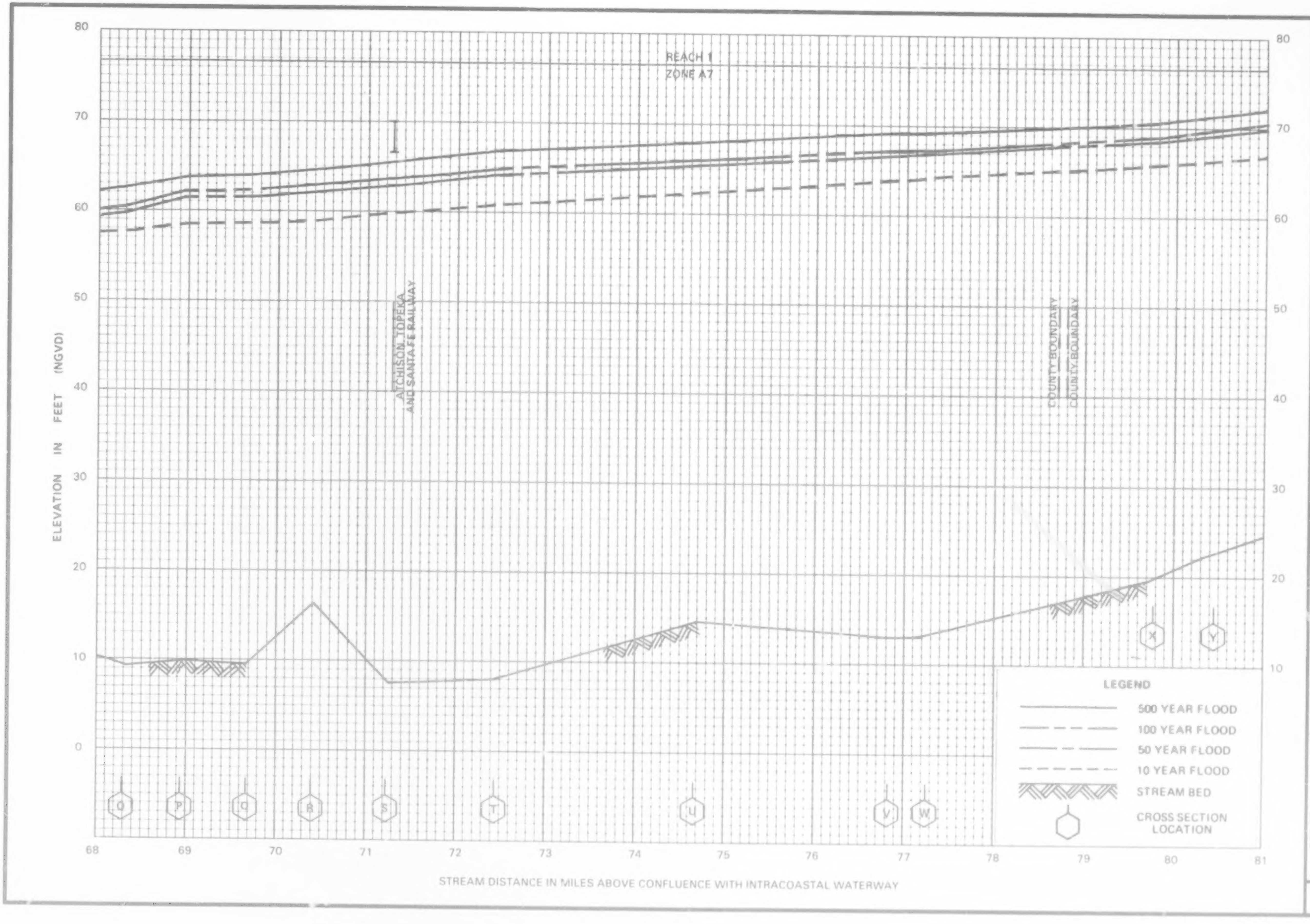


FLOOD PROFILES

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

01P

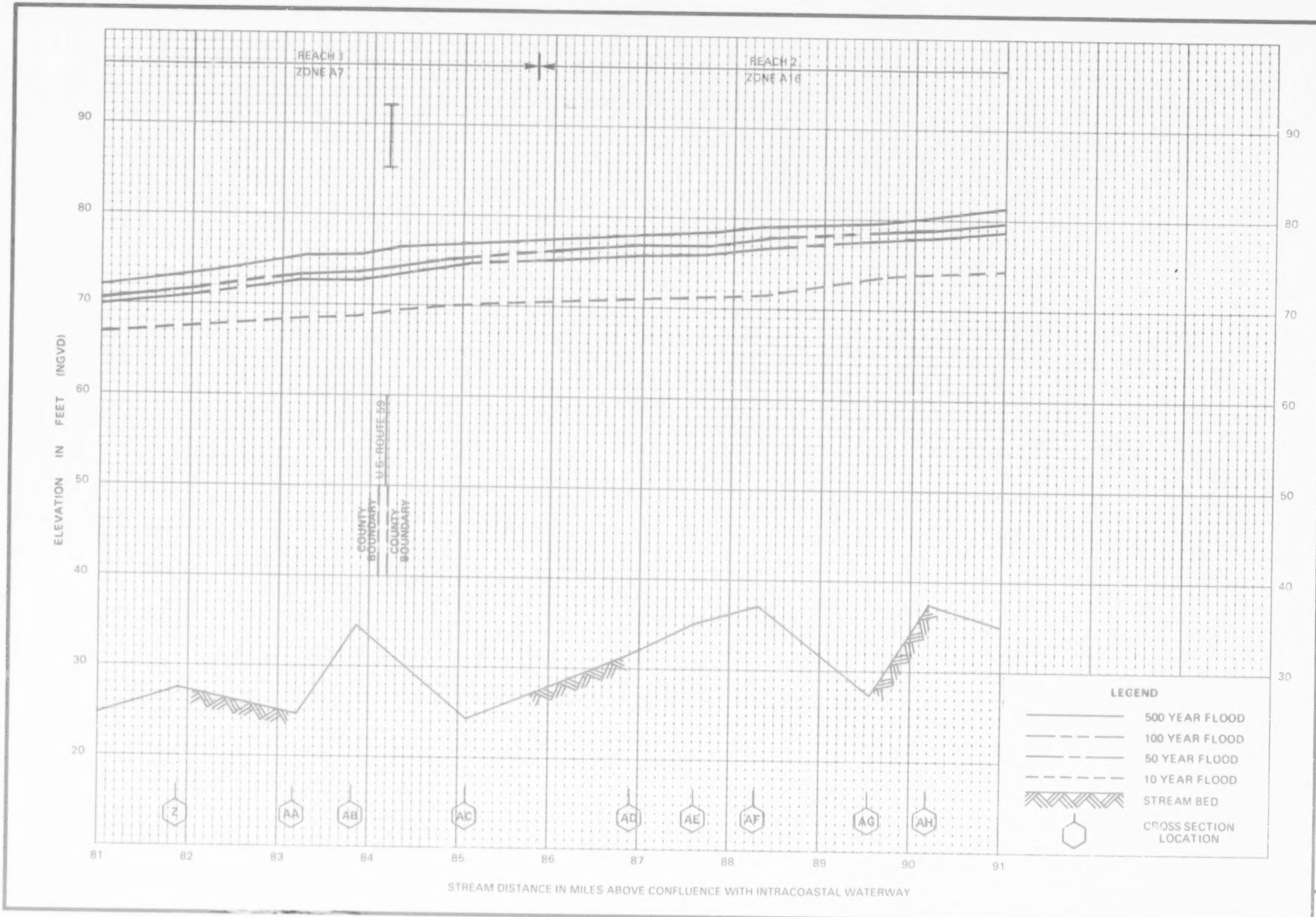


FLOOD PROFILES

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY TX

02

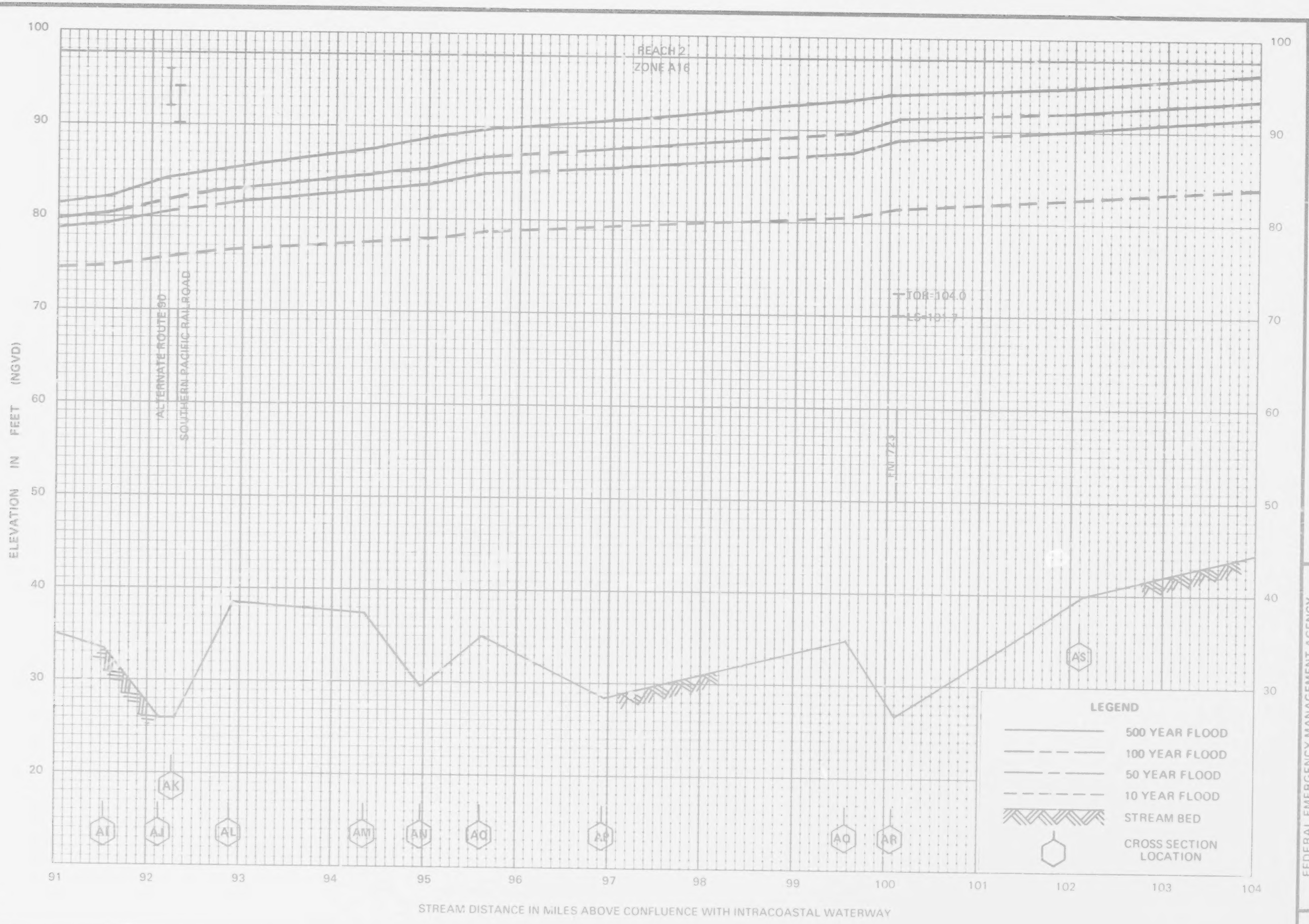


FLOOD PROFILES

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

03P

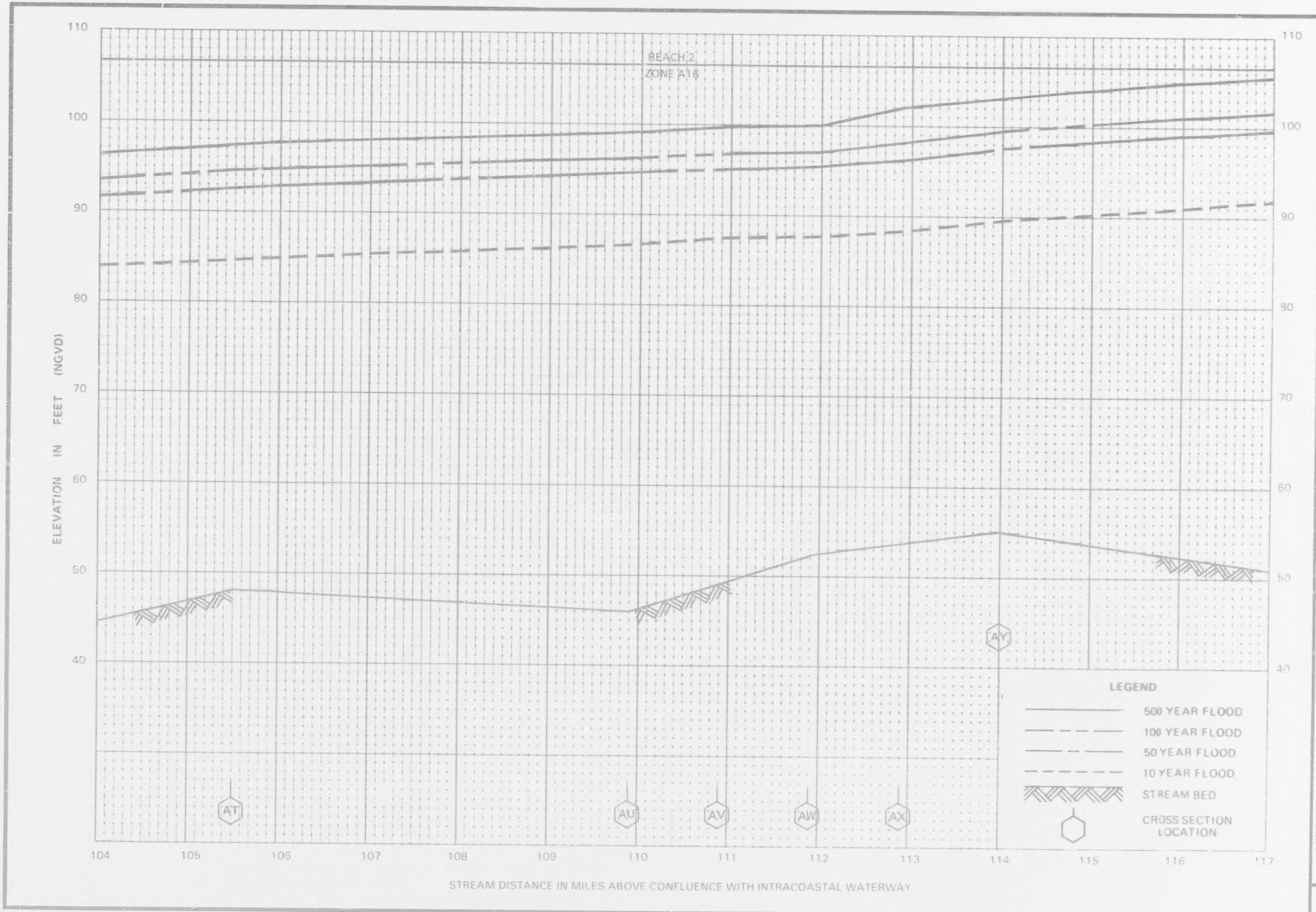


FLOOD PROFILES

BRAZOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

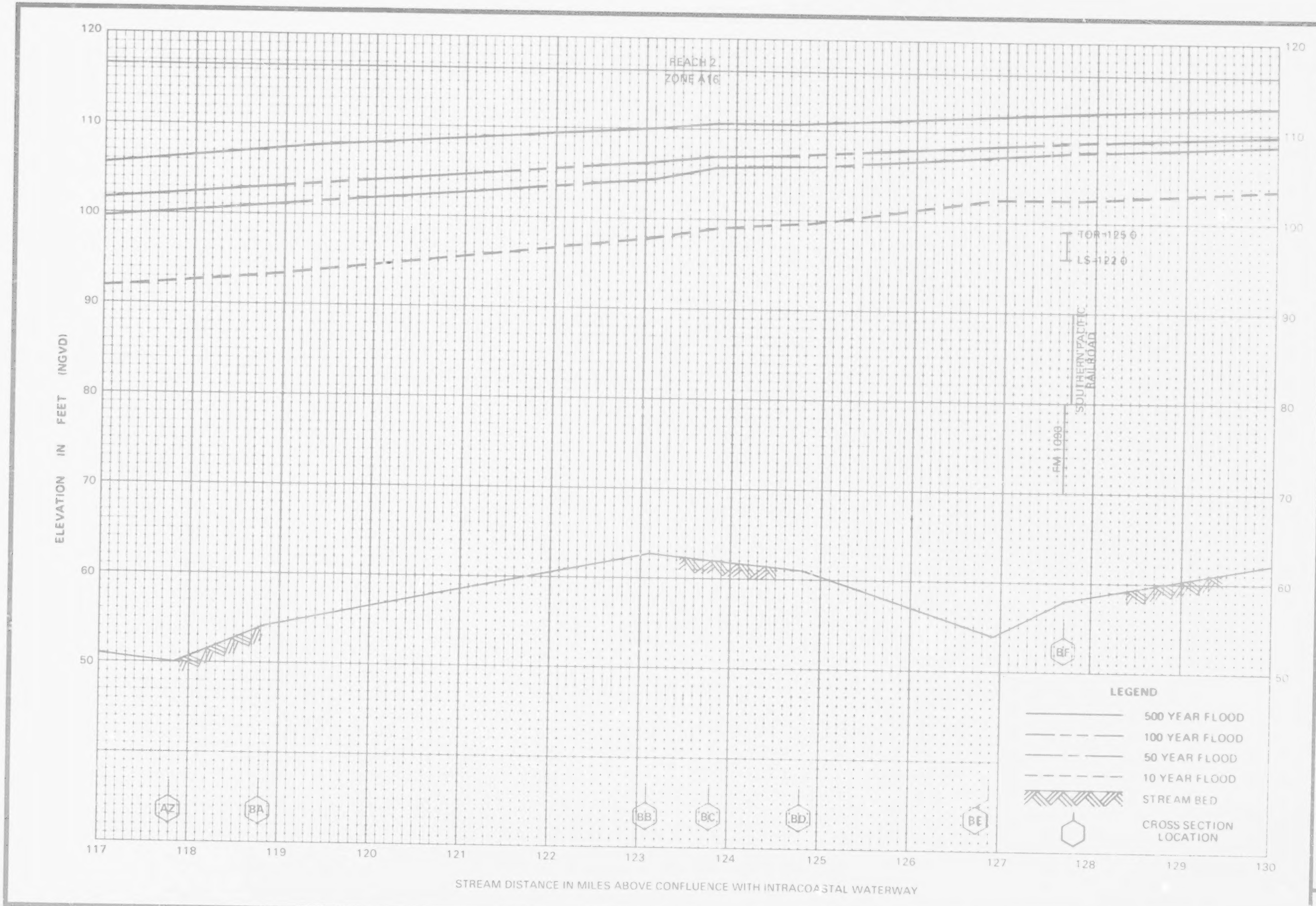


FLOOD PROFILES

BRAZOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX



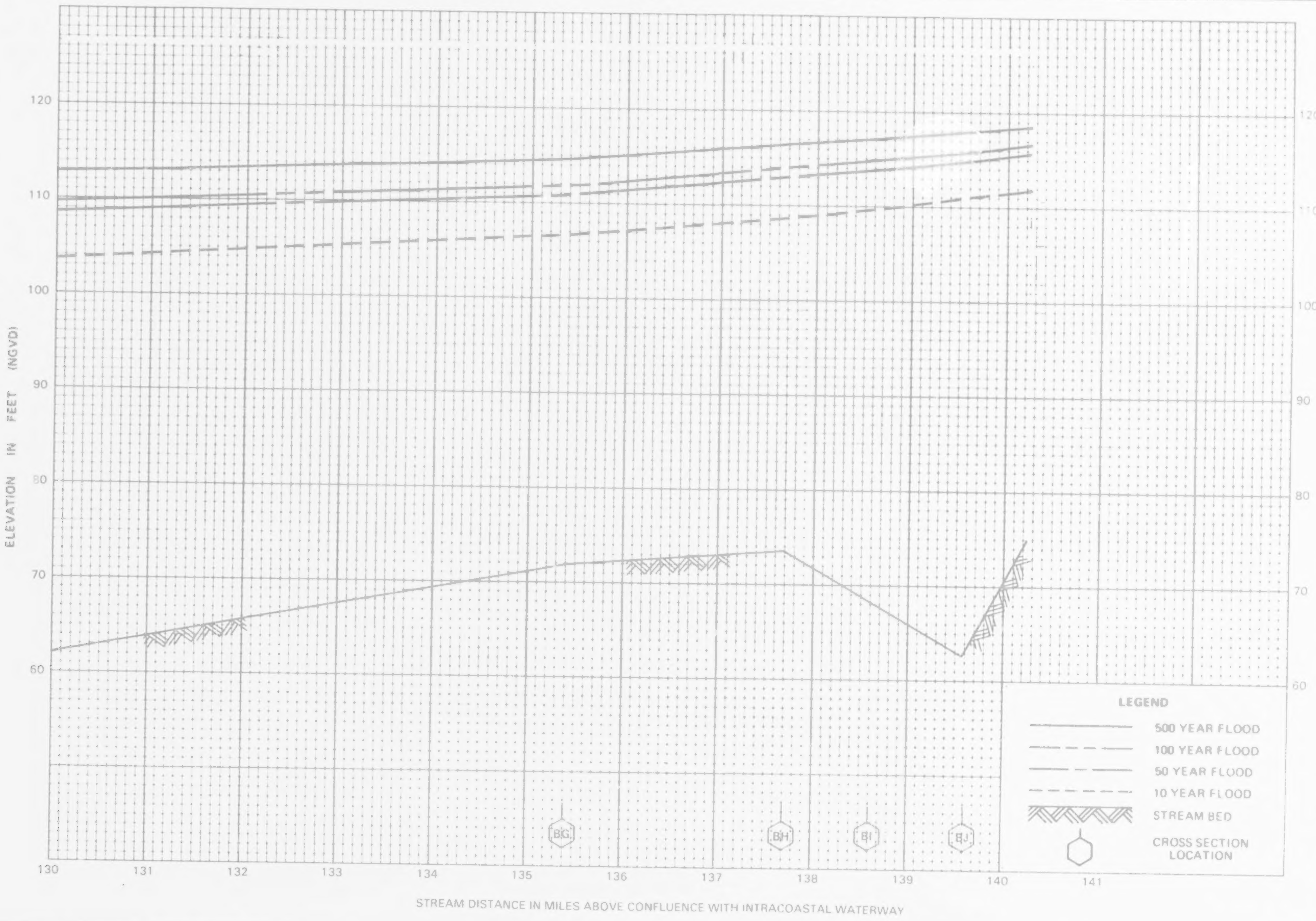
FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

FLOOD PROFILES

BRAZOS RIVER

06P

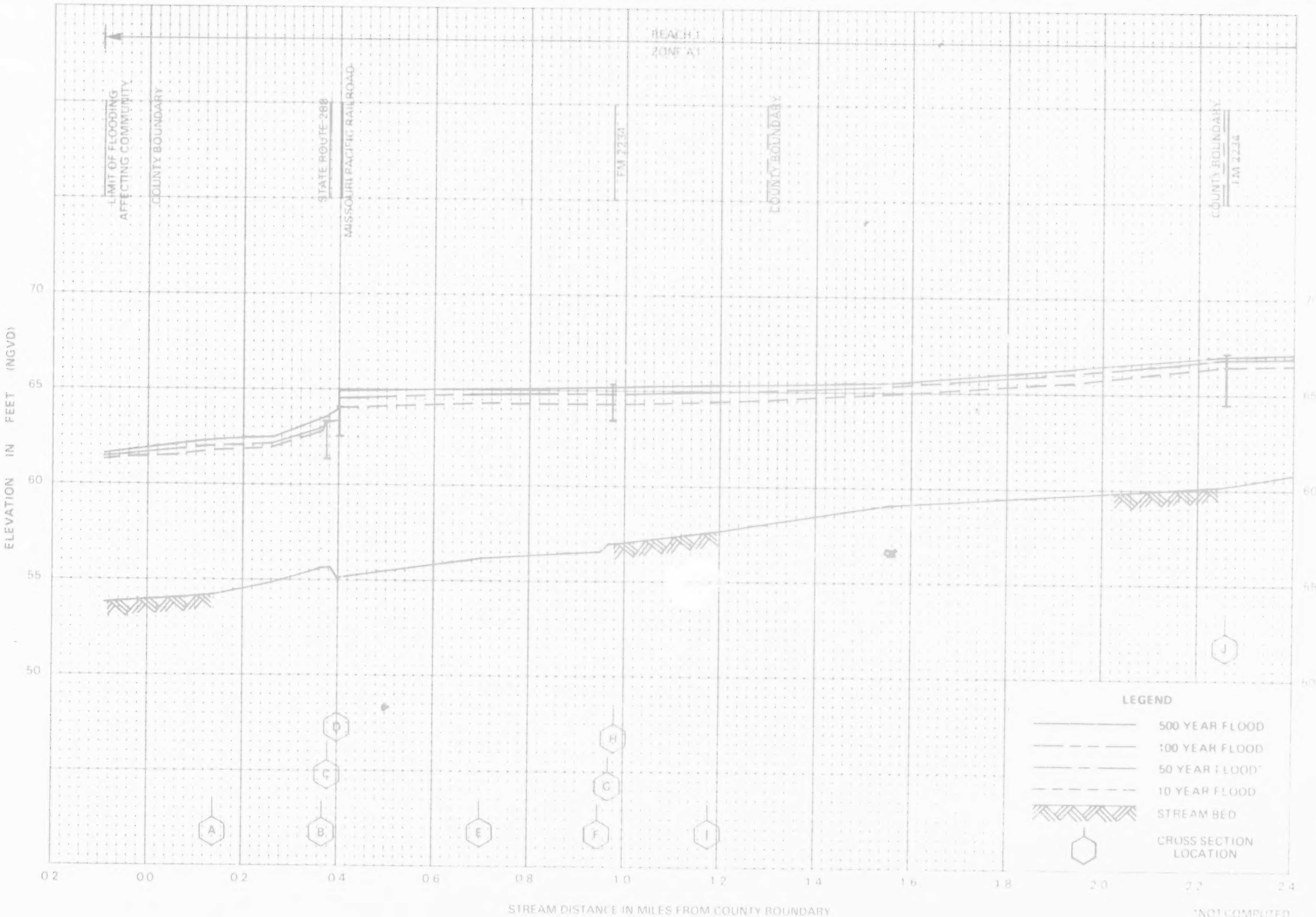


FLOOD PROFILES

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

07P



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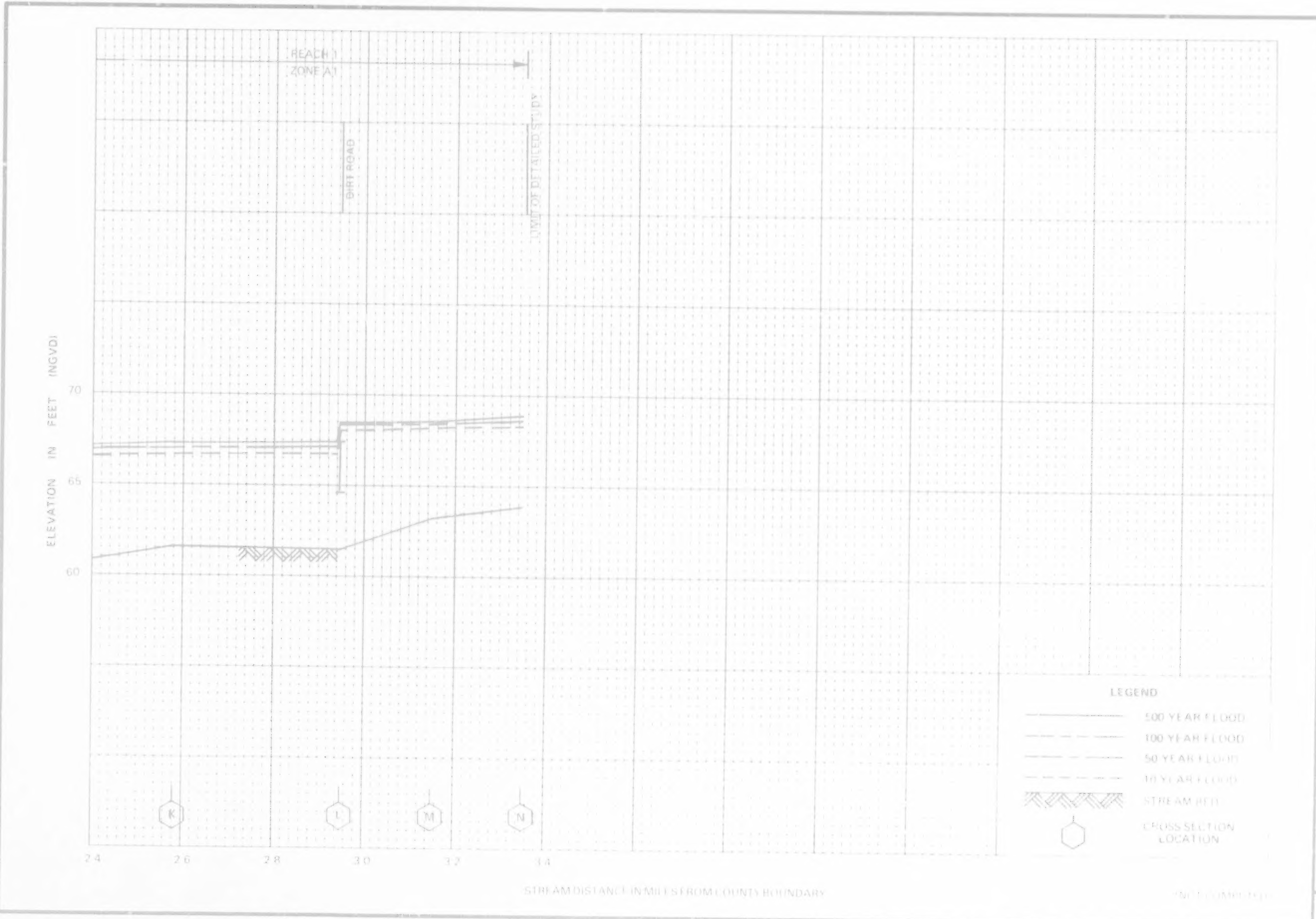
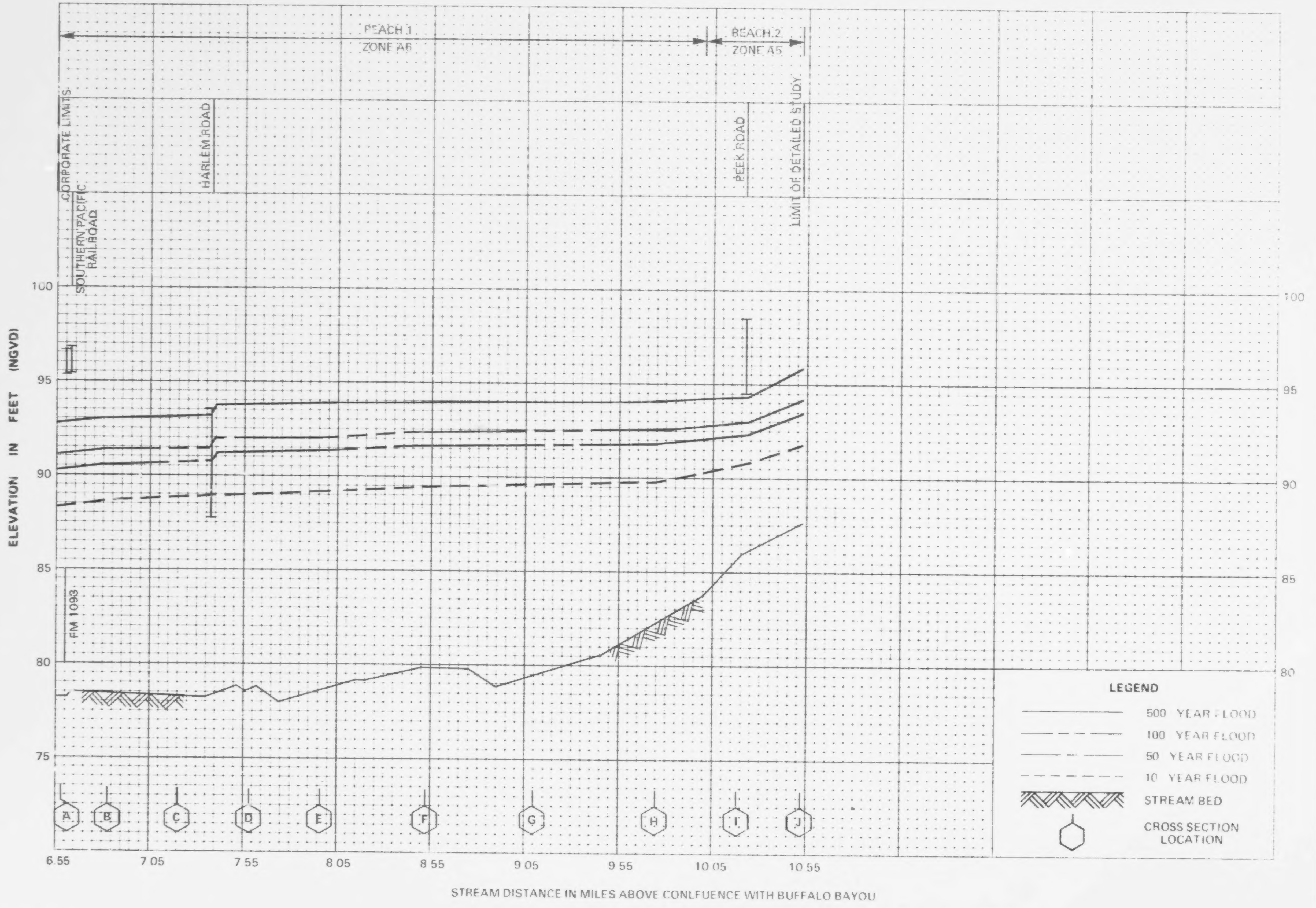


FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

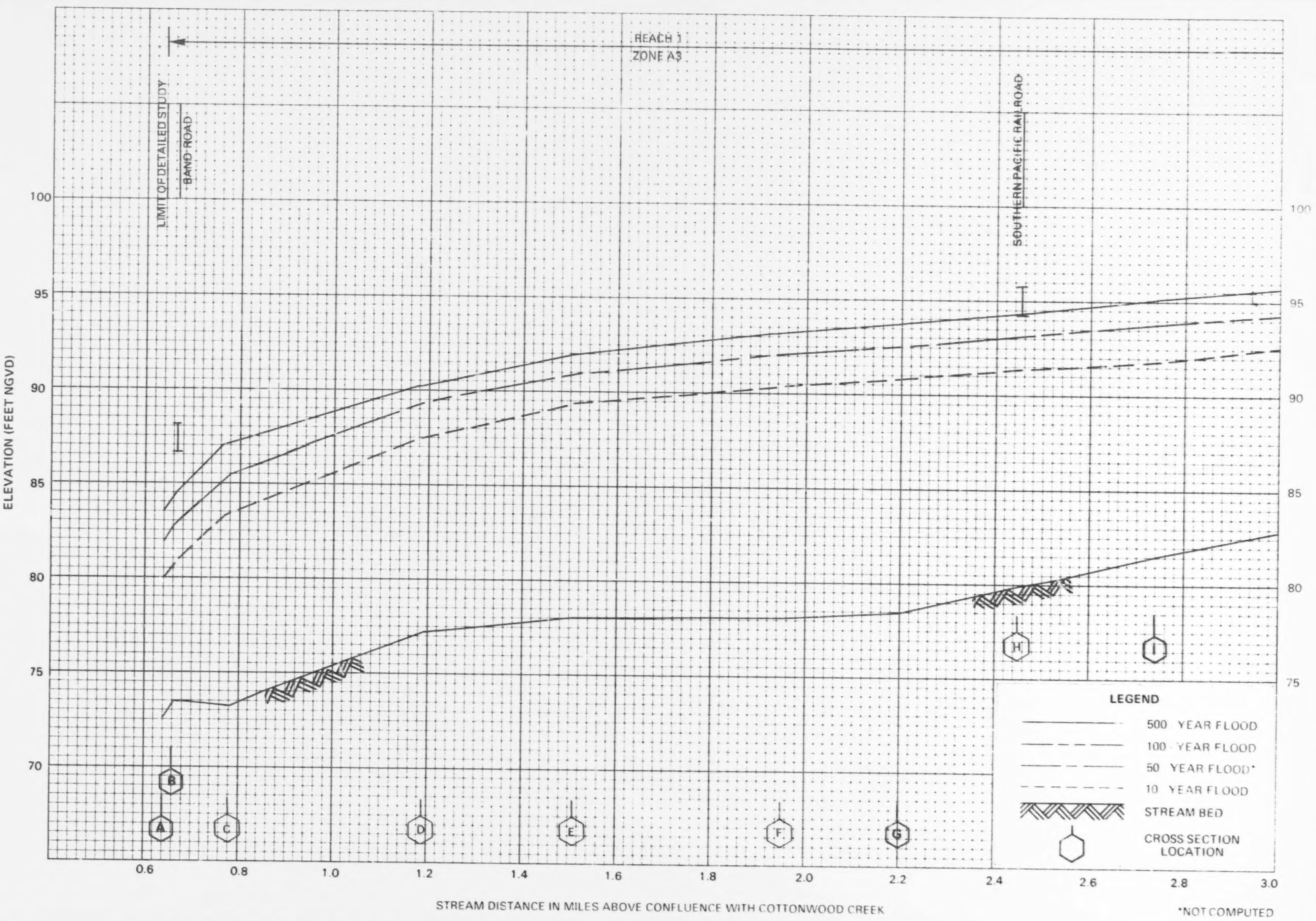


FLOOD PROFILES

CLODINE DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

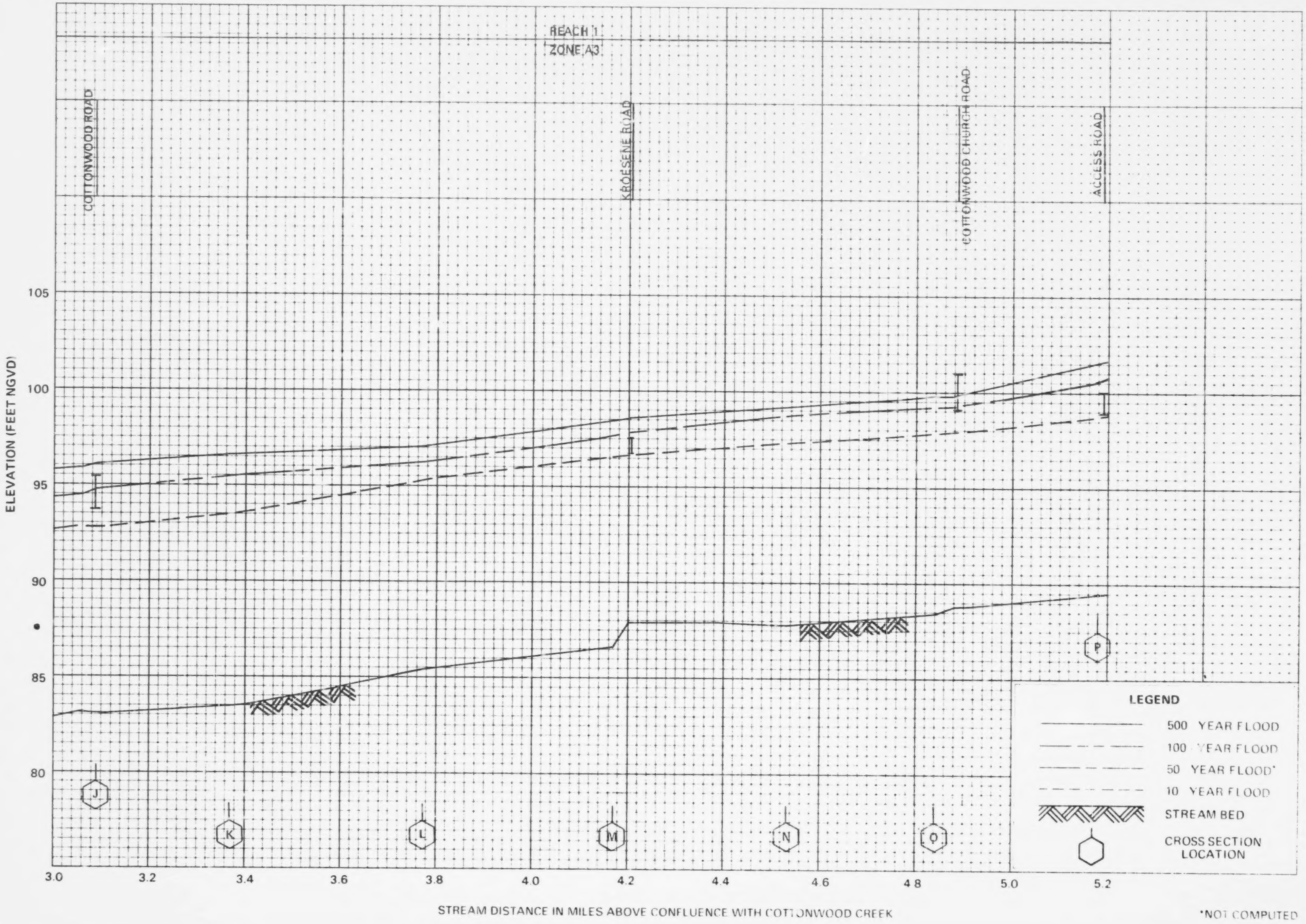


FLOOD PROFILES

COON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

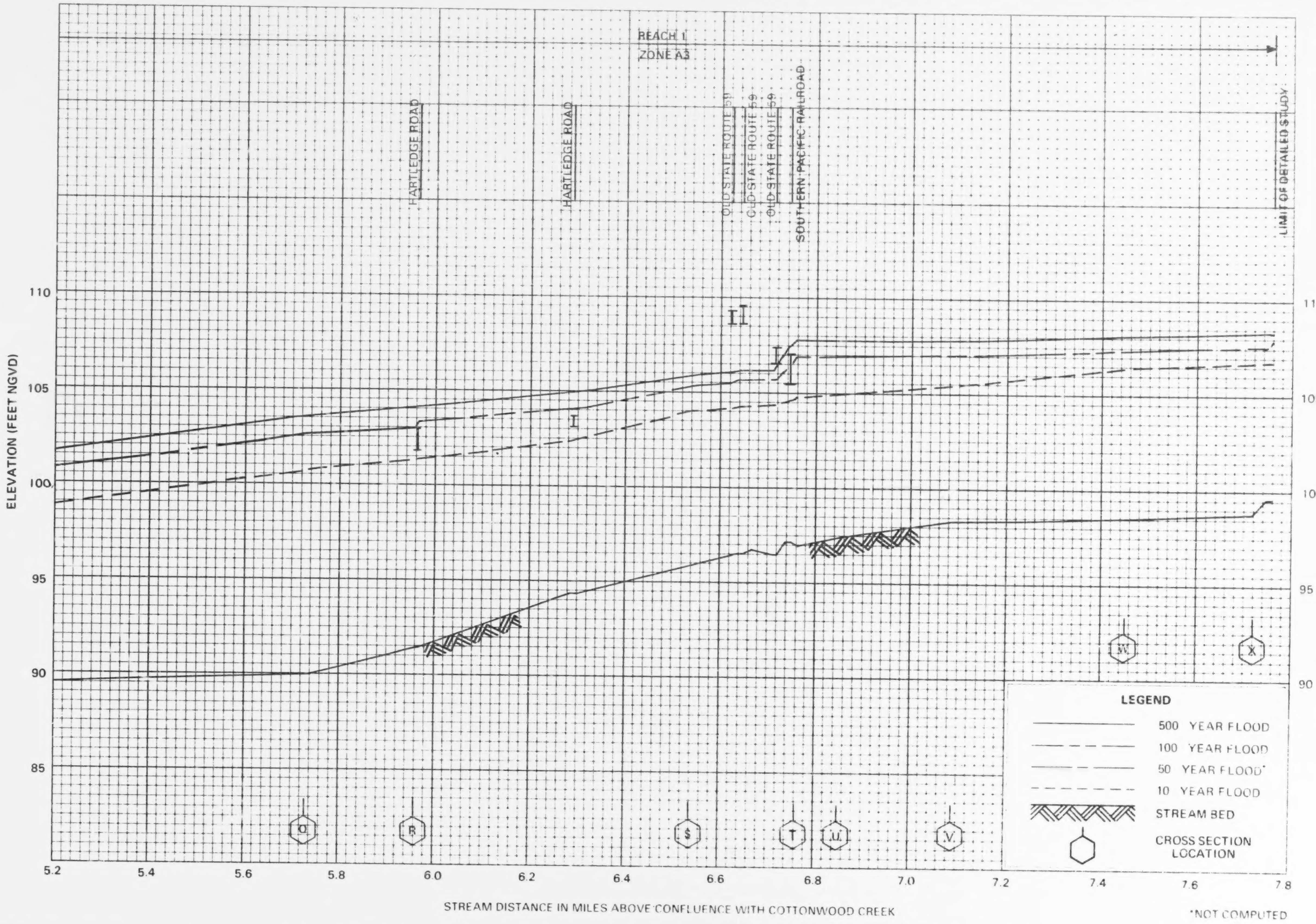


FLOOD PROFILES

COON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX



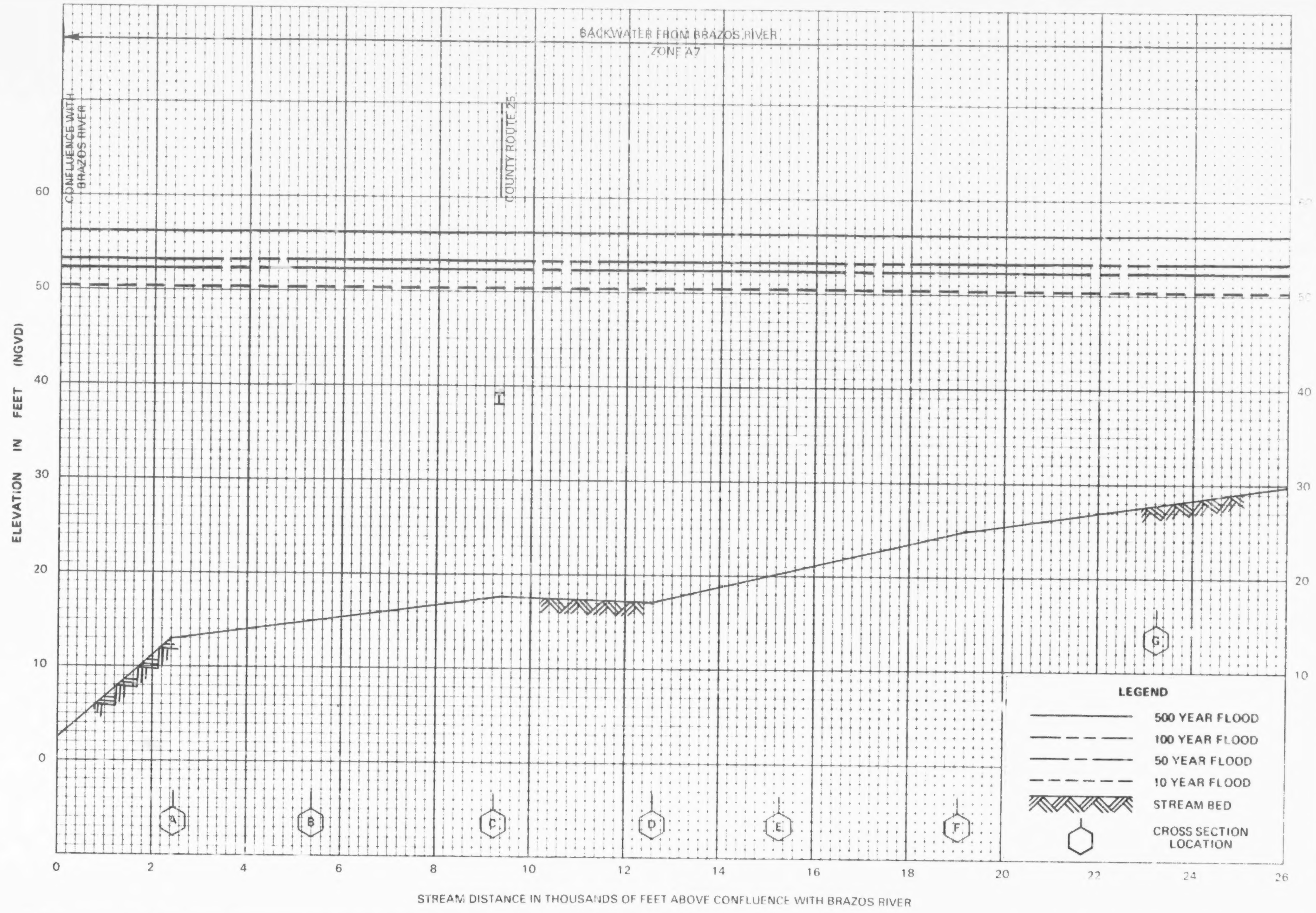
FLOOD PROFILES

COON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

13P



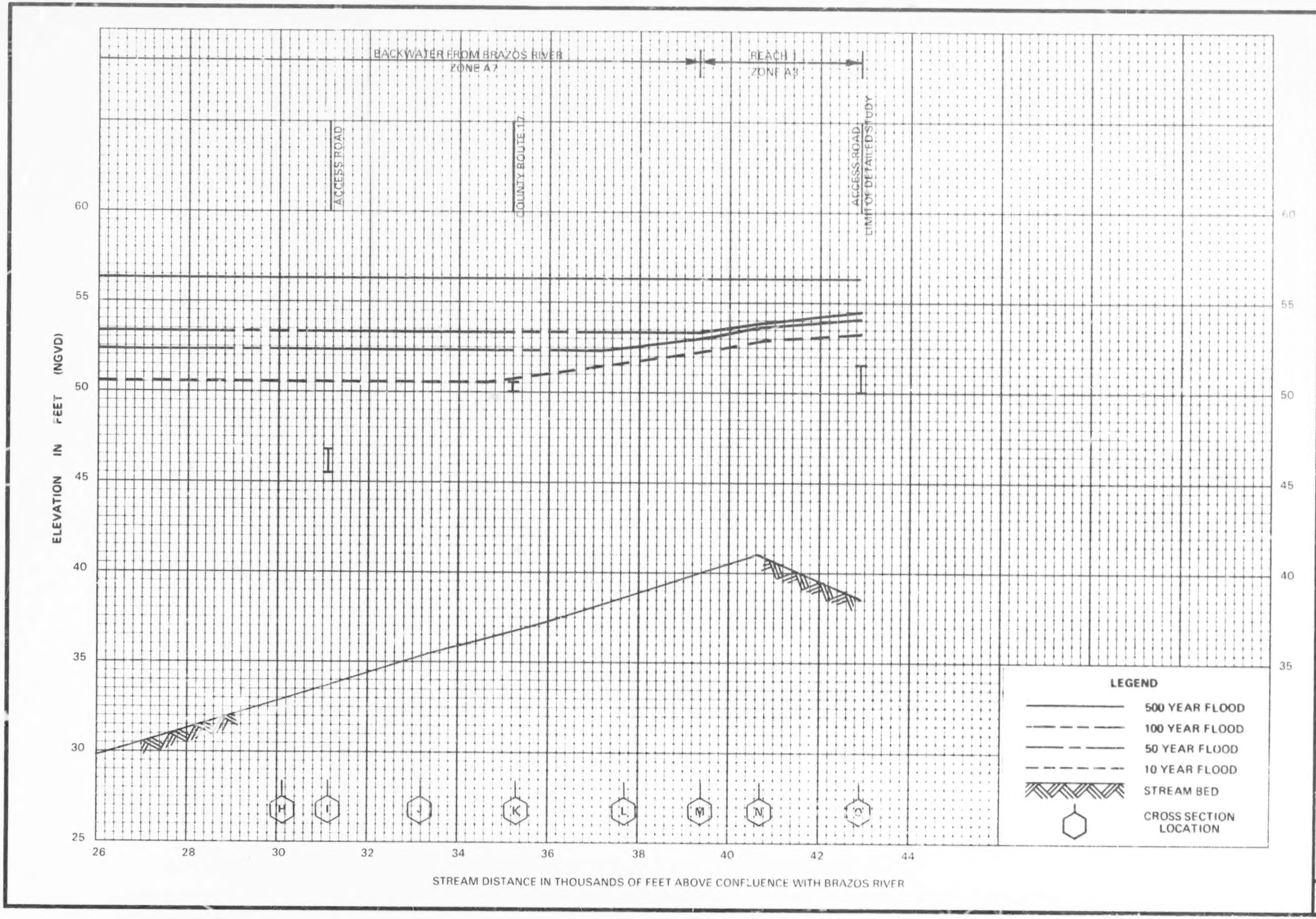
FLOOD PROFILES

COW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

14P

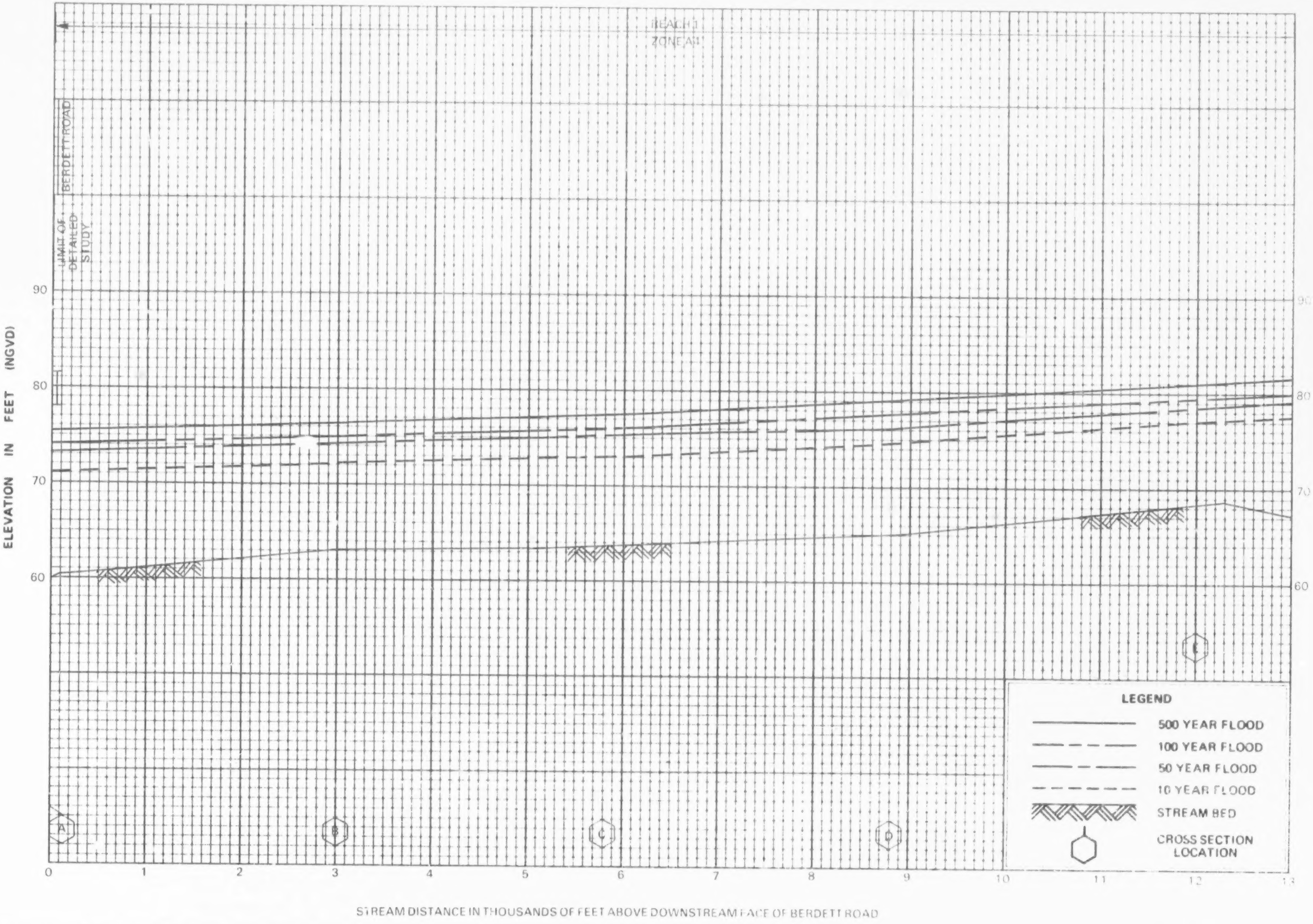


FLOOD PROFILES

COW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX



FLOOD PROFILES

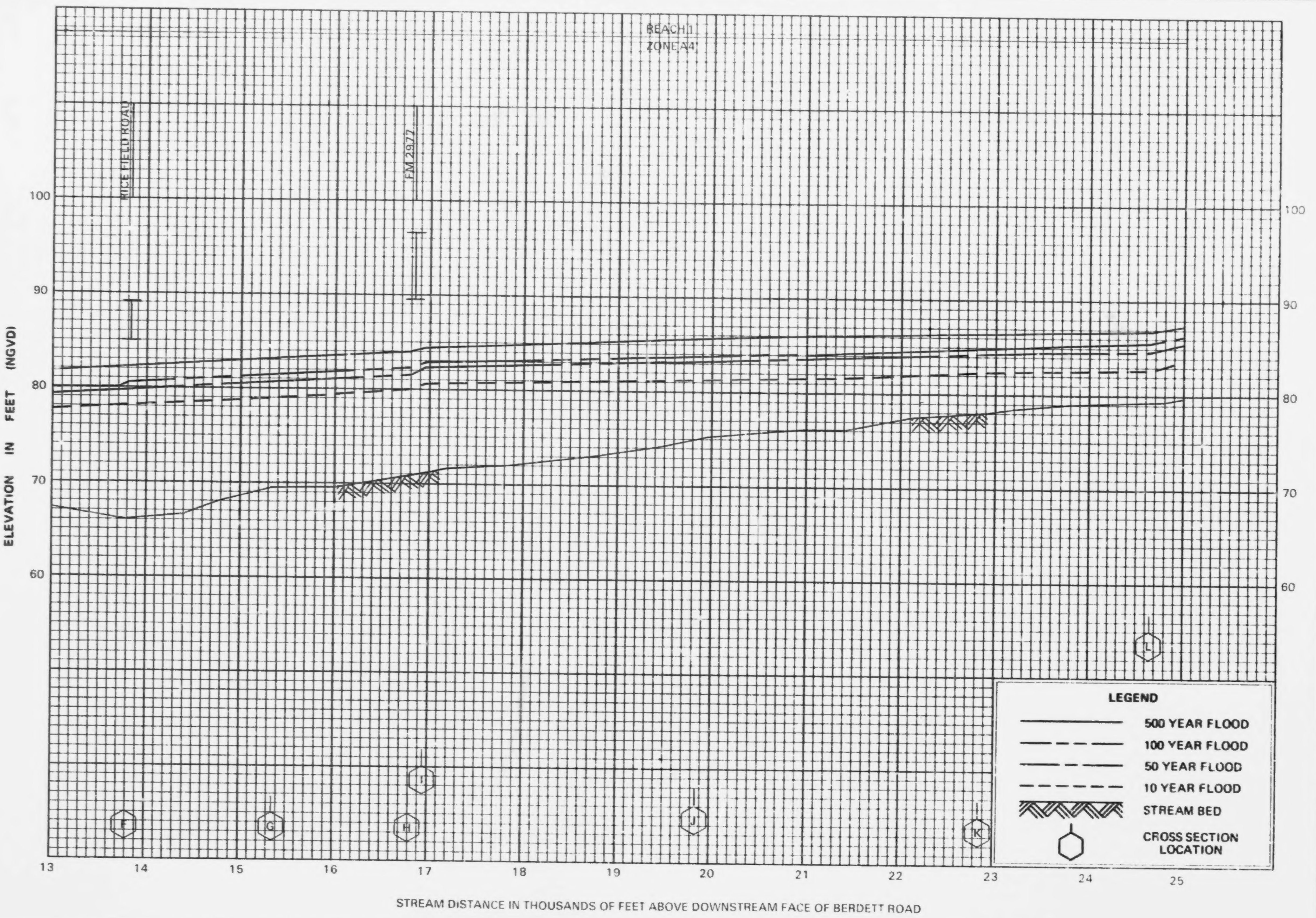
DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

16P

41



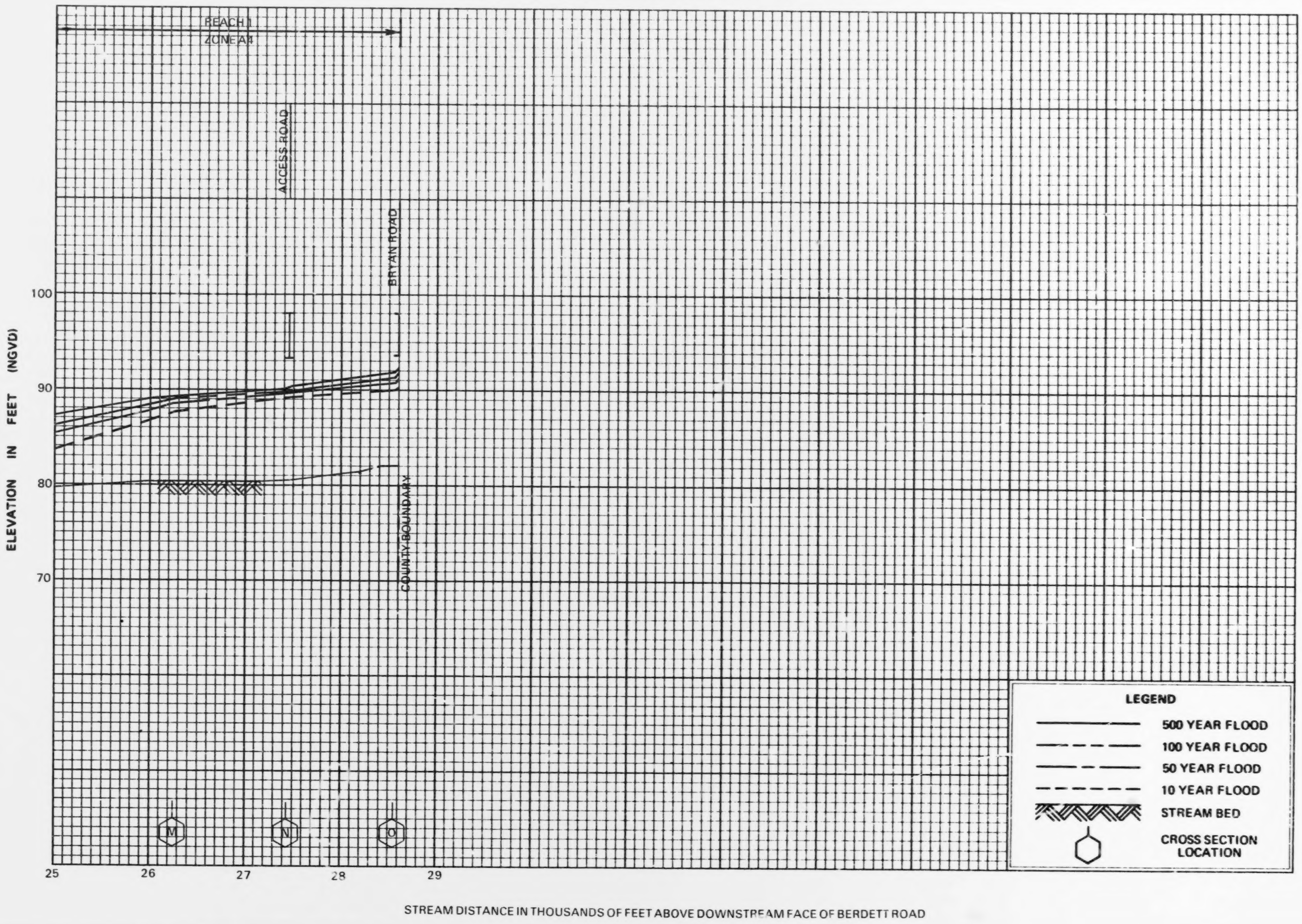
FLOOD PROFILES

DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

17P



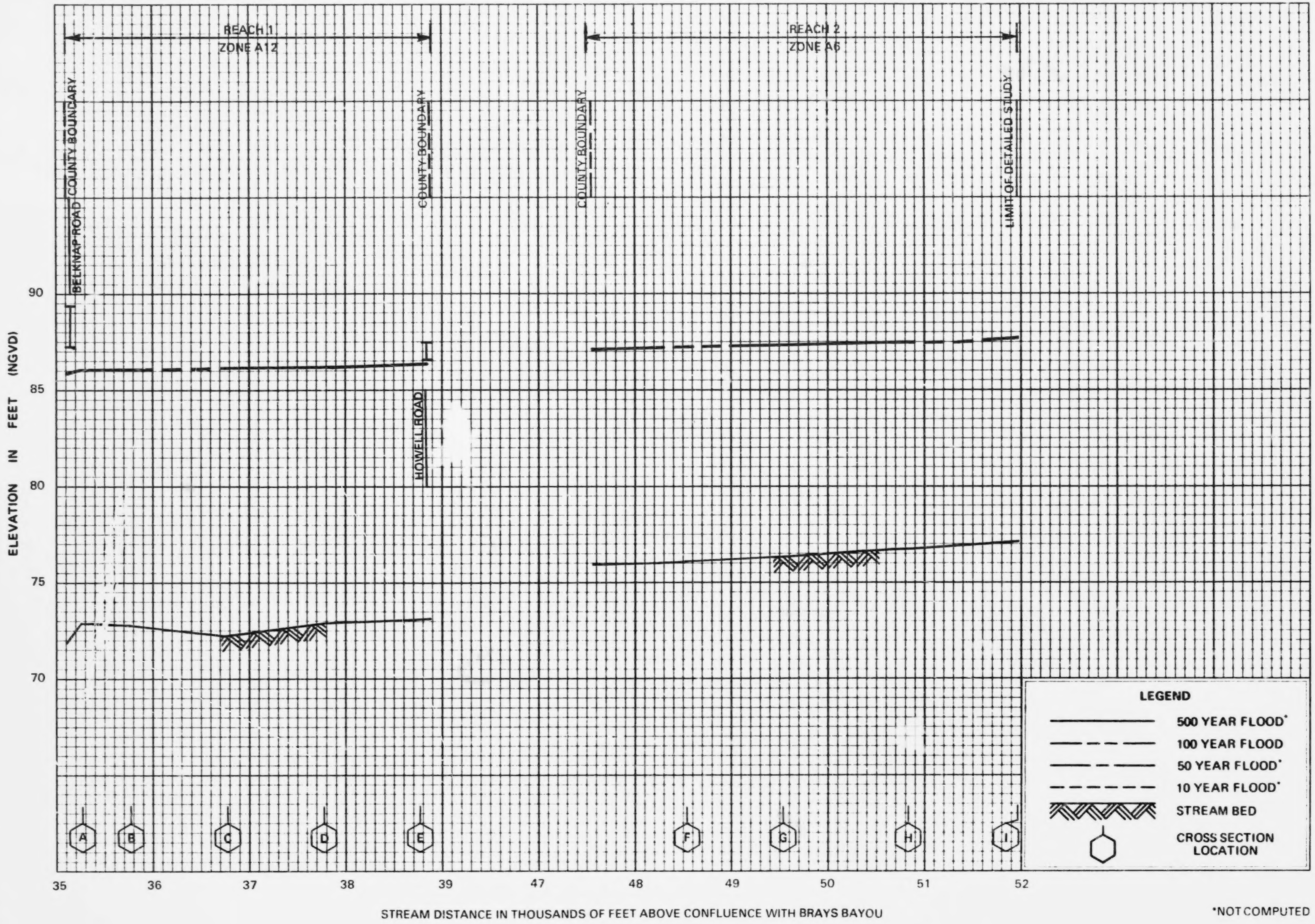
FLOOD PROFILES

DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

18P

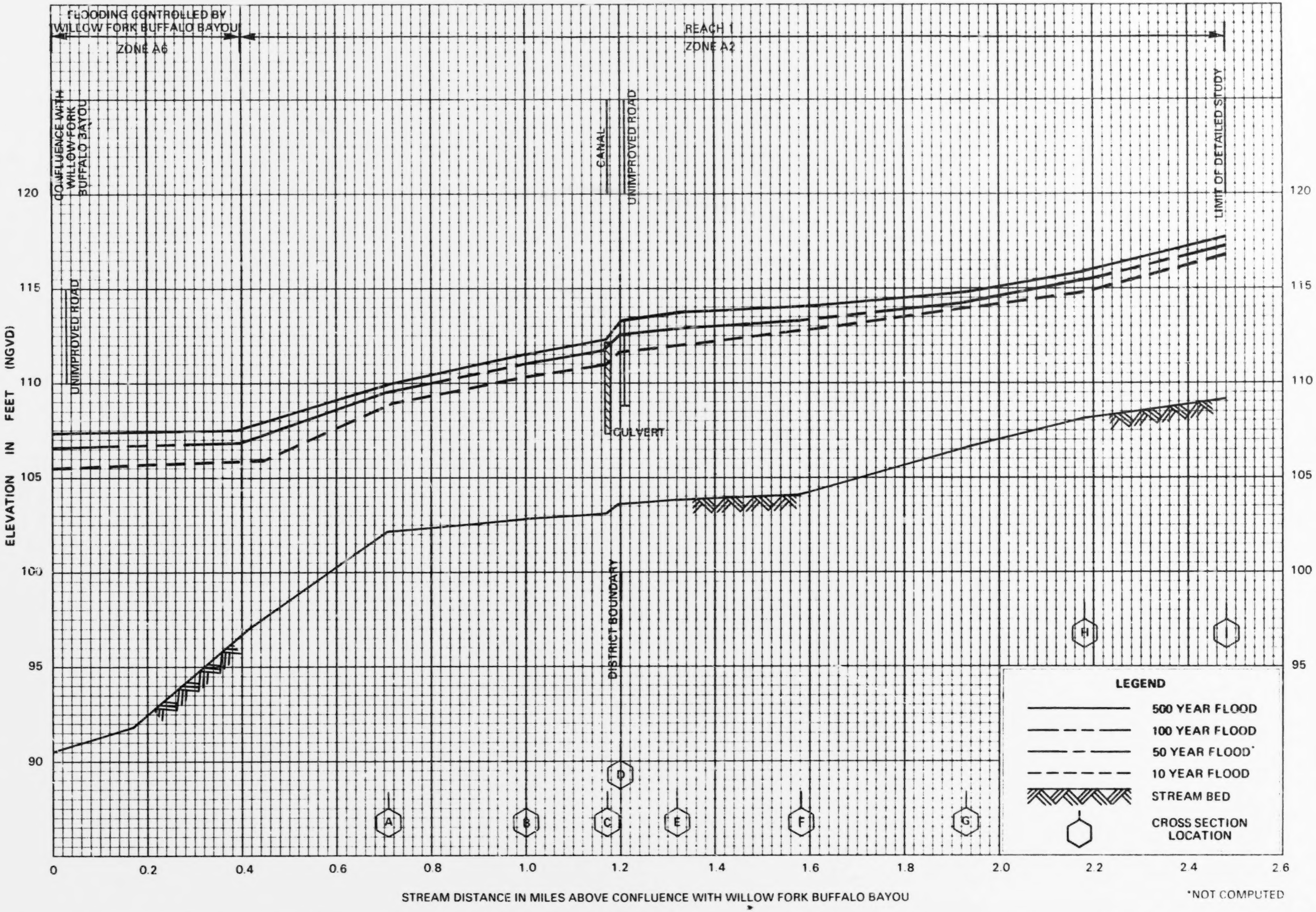


FLOOD PROFILES

KEEGANS BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX



FLOOD PROFILES

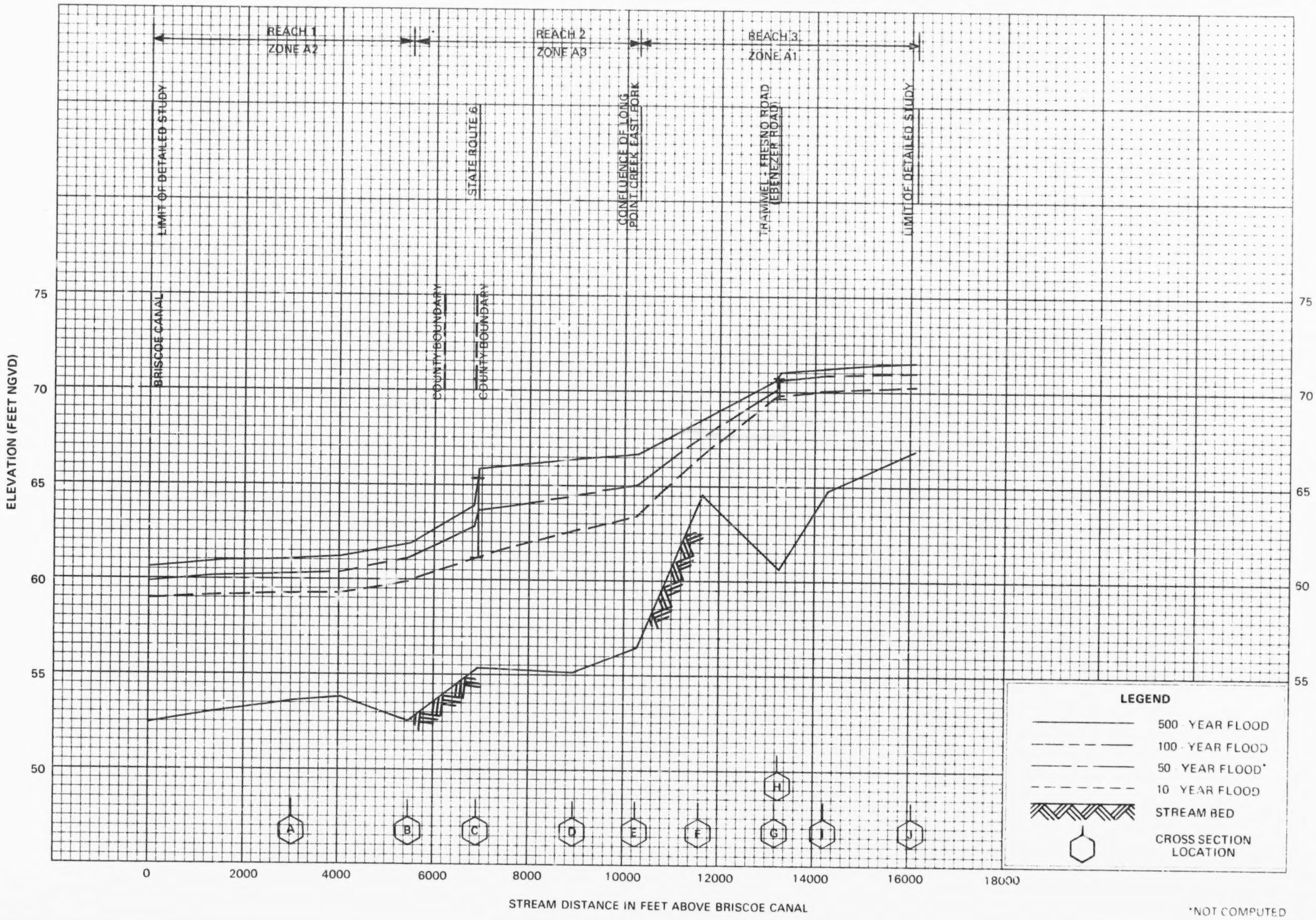
LITTLE PRONG BUFFALO BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

20P

65



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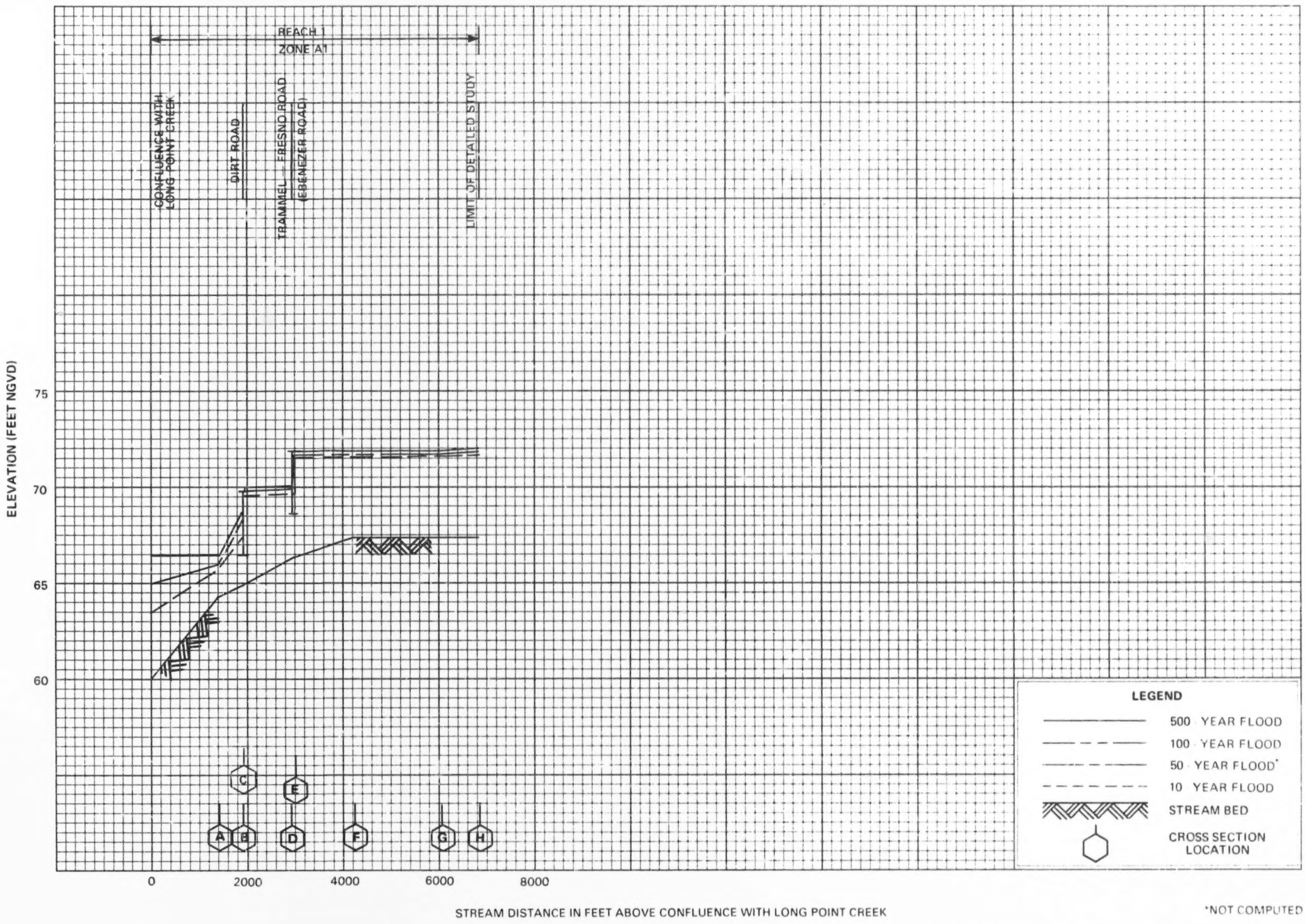
FLOOD PROFILES

LONG POINT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

66



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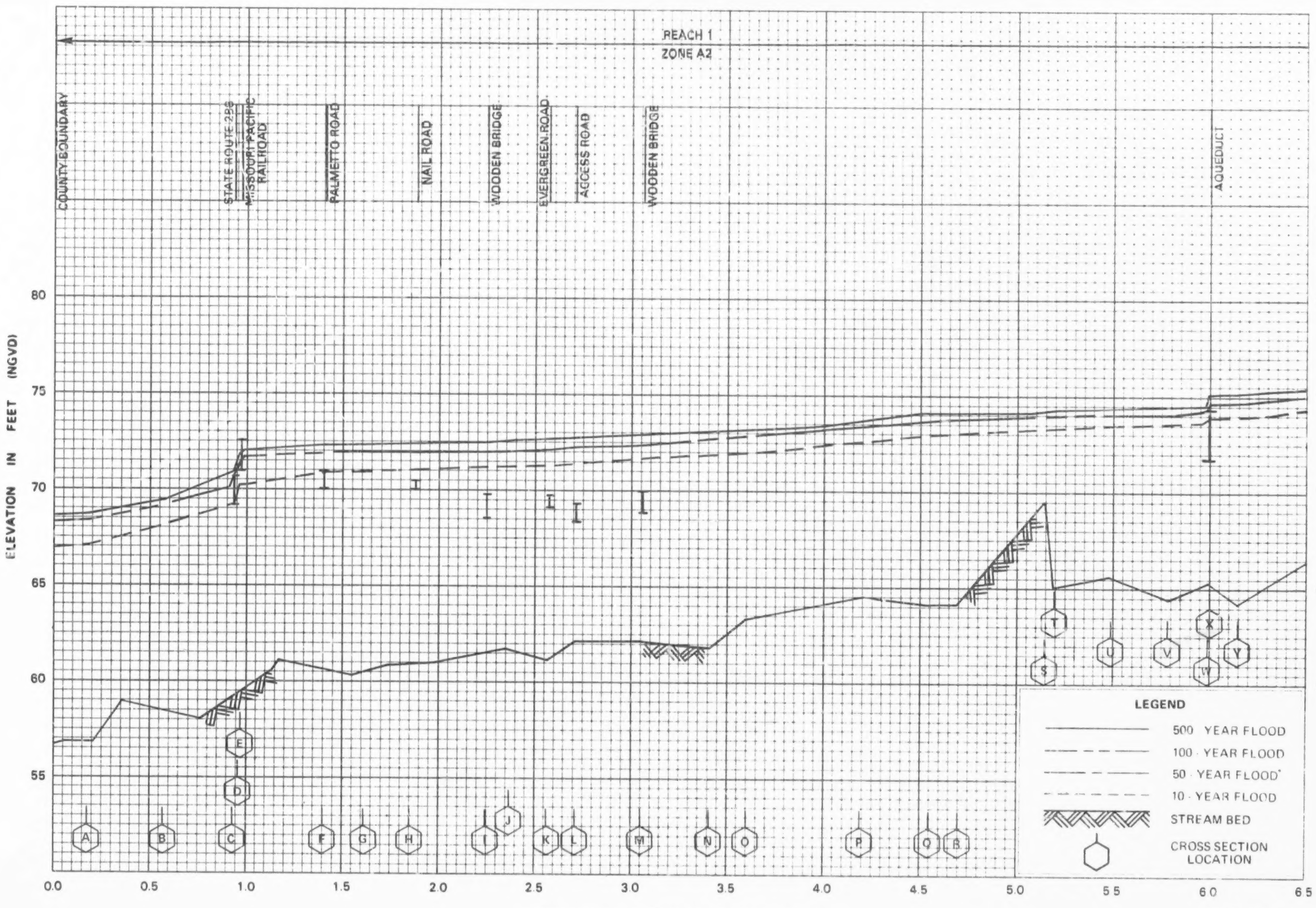
FLOOD PROFILES

LONG POINT CREEK EAST FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

67



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FLOOD PROFILES

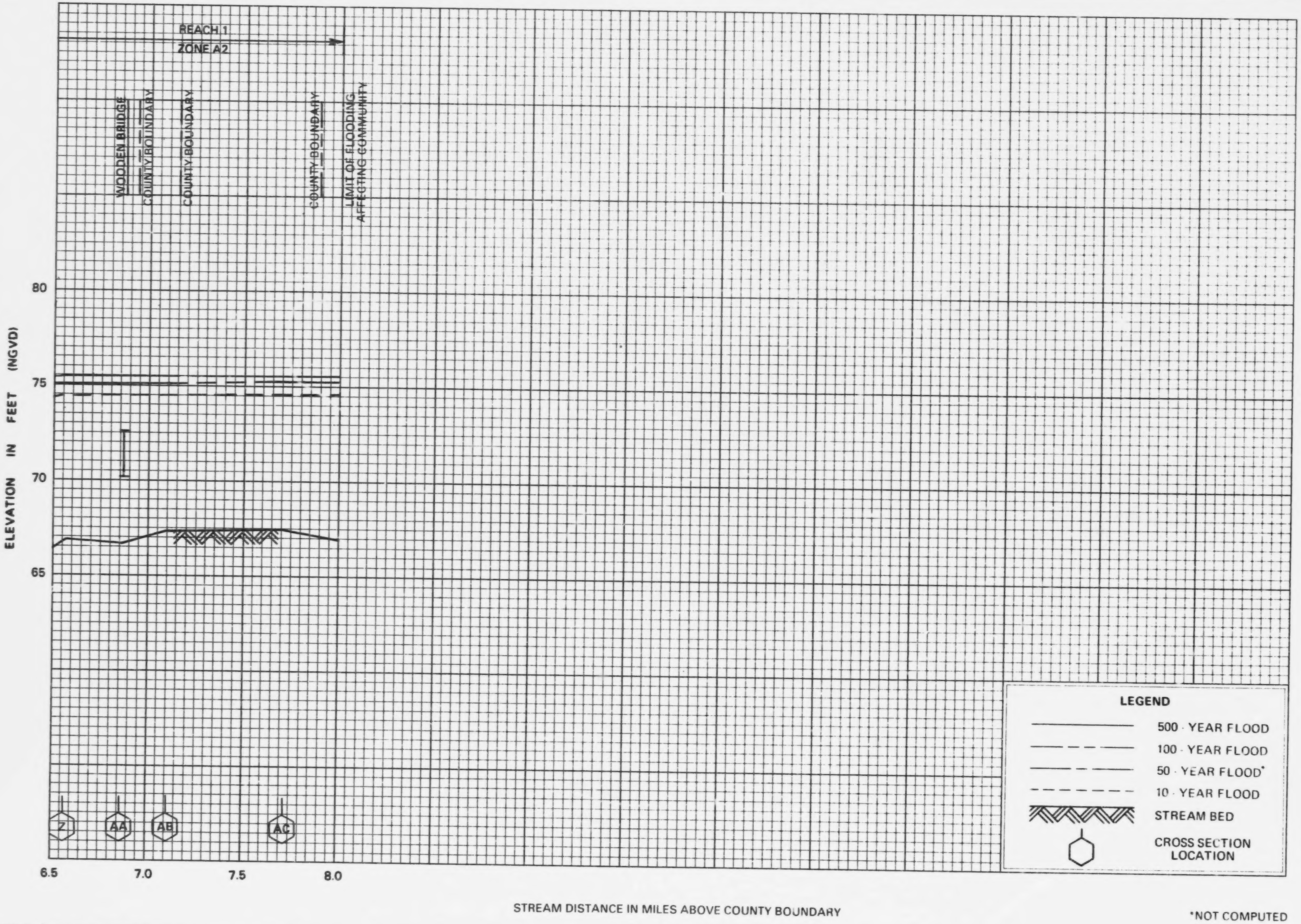
MUSTANG BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

23P

65



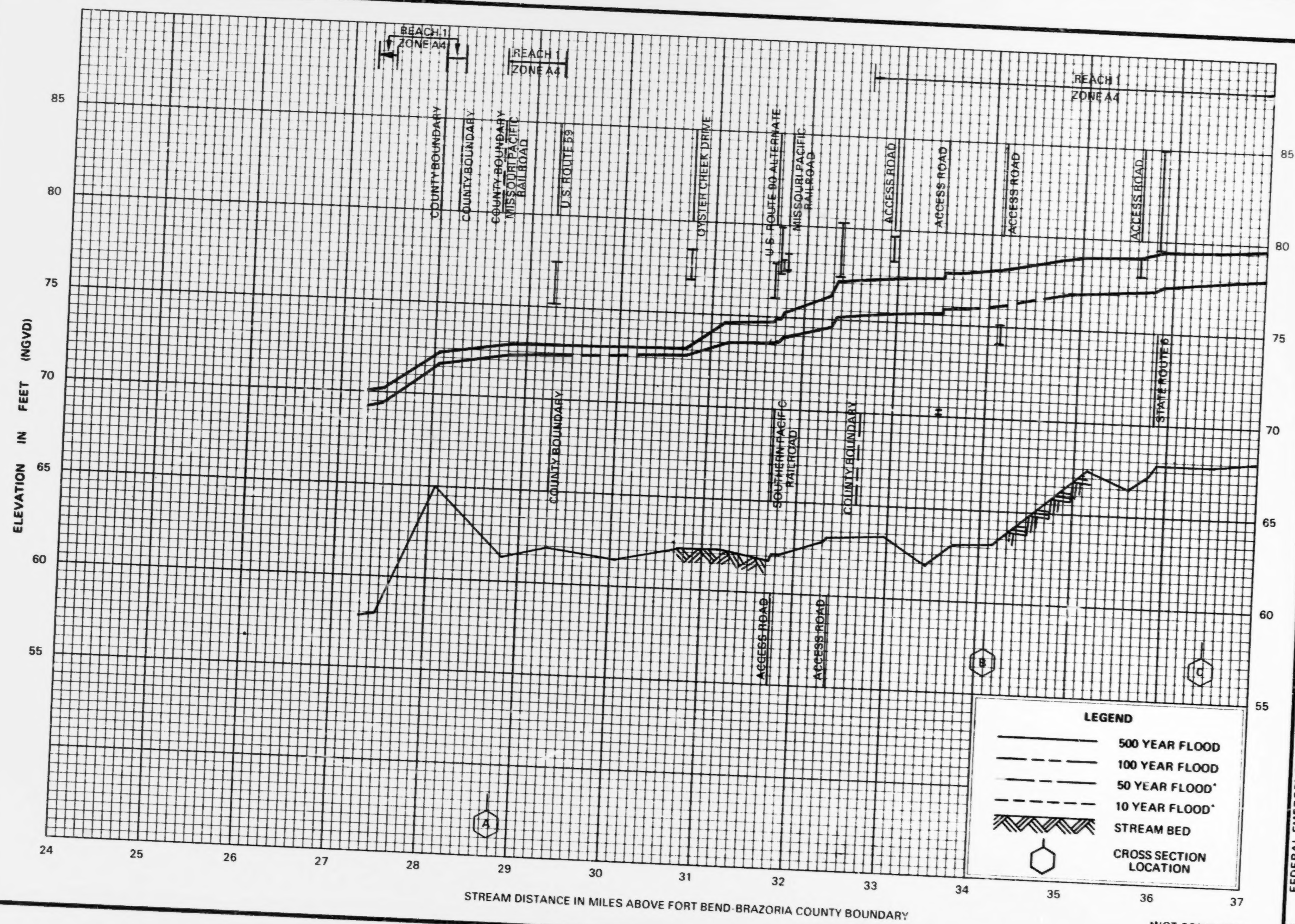
FLOOD PROFILES

MUSTANG BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

24P



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FEDERAL EMERGENCY MANAGEMENT AGENCY

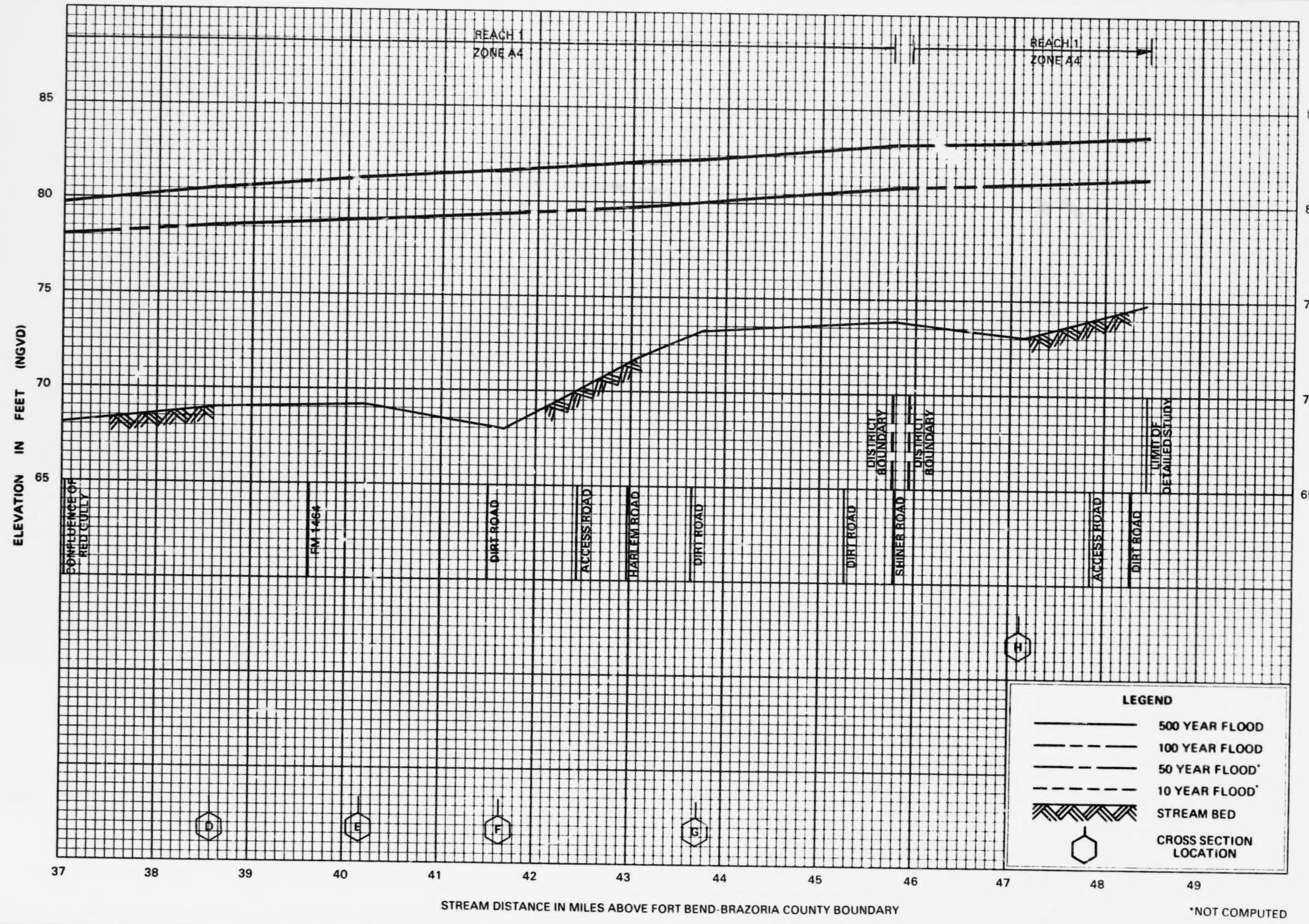
FORT BEND COUNTY, TX

FLOOD PROFILES

OYSTER CREEK

25P

70



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FLOOD PROFILES

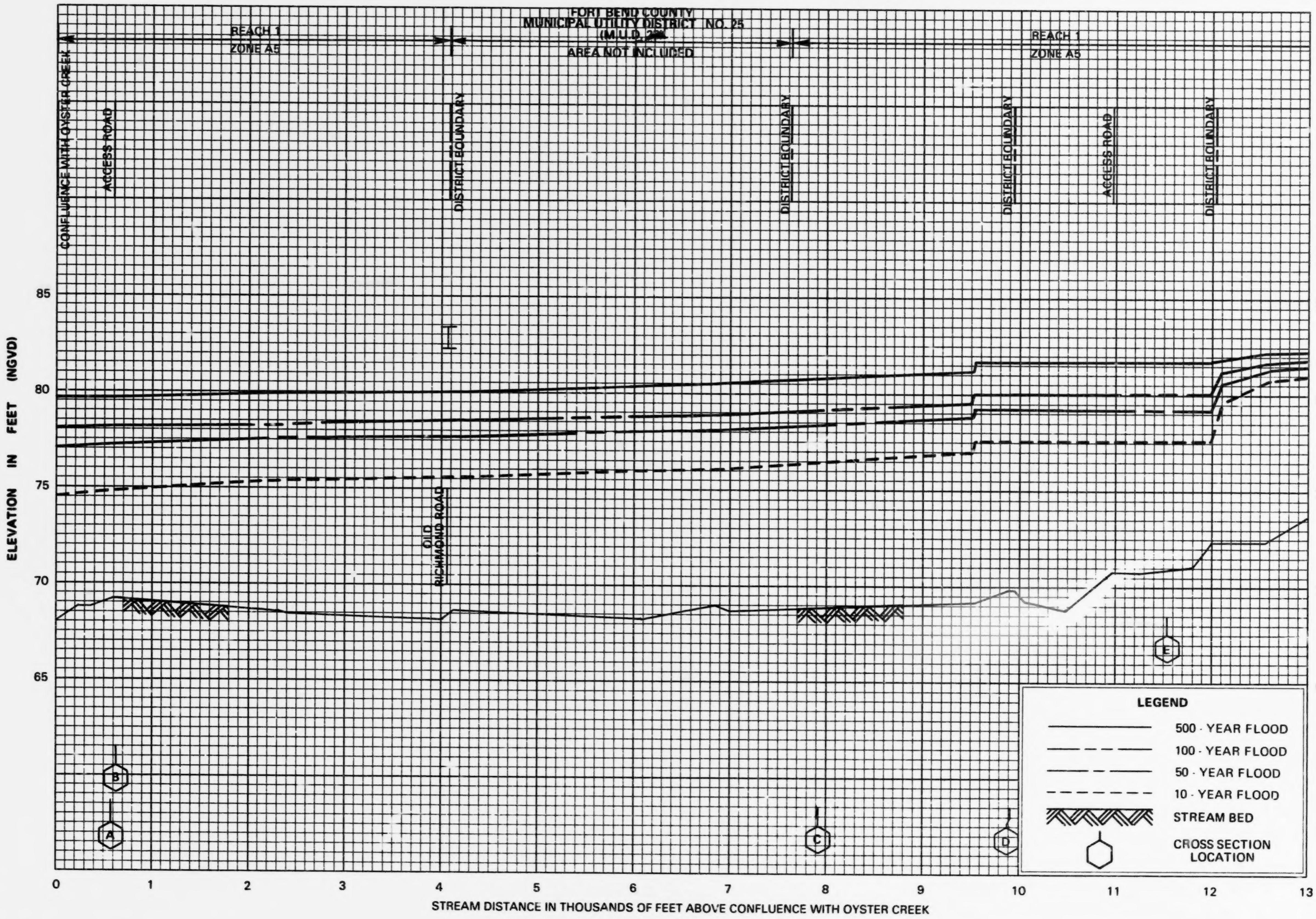
OYSTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

26P

71



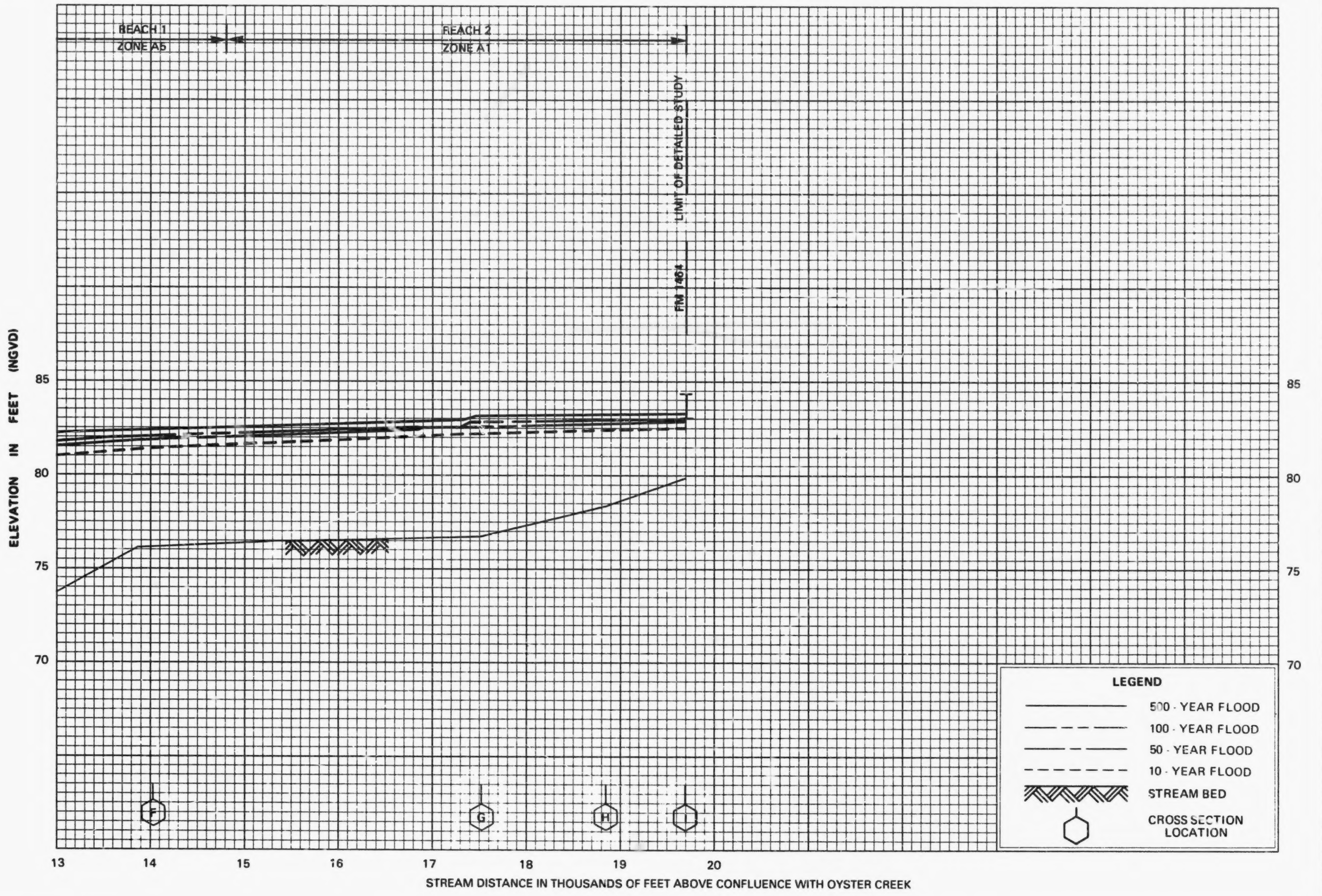
FLOOD PROFILES

RED GULLY

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

72



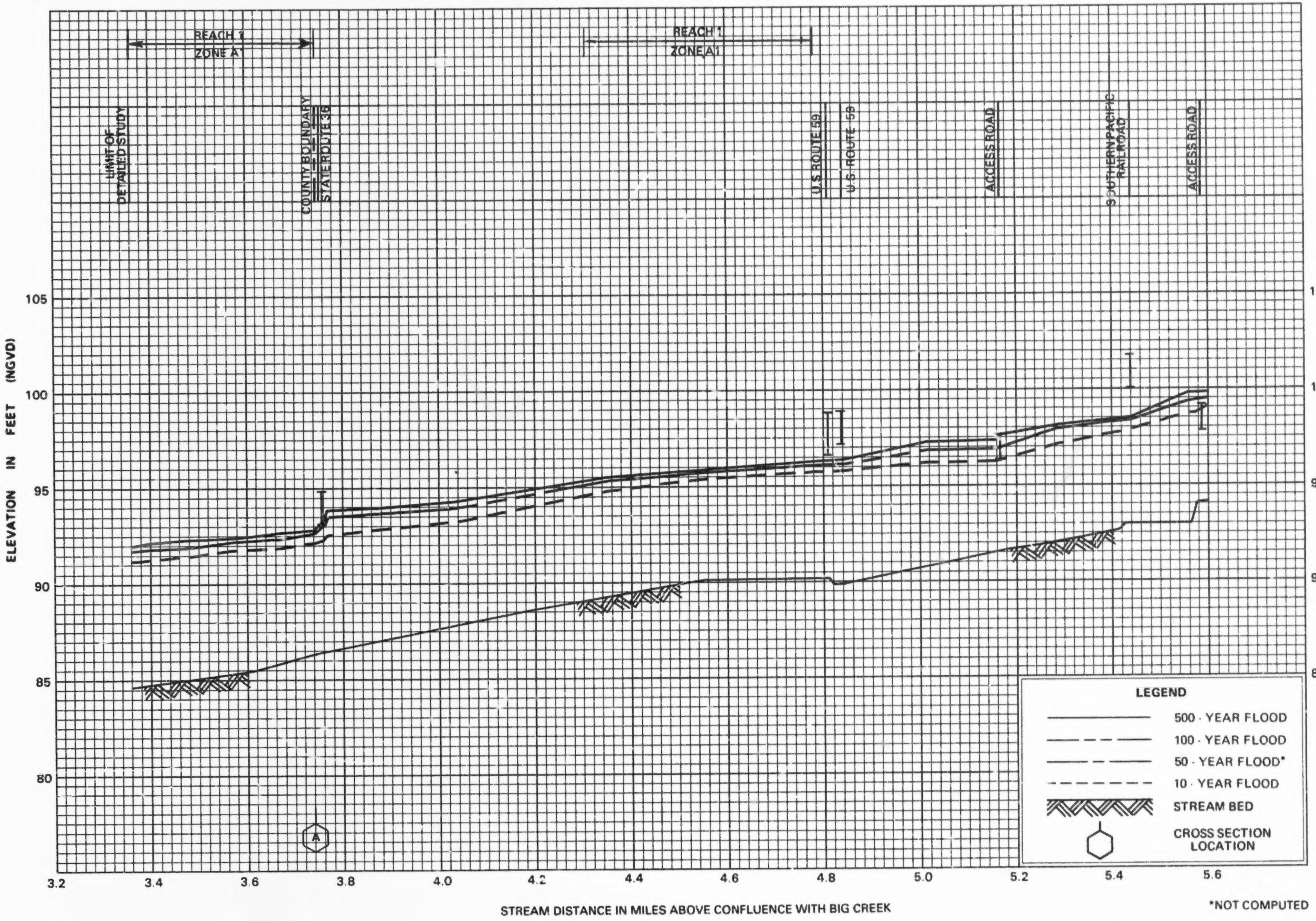
FLOOD PROFILES

RED GULLY

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

28P



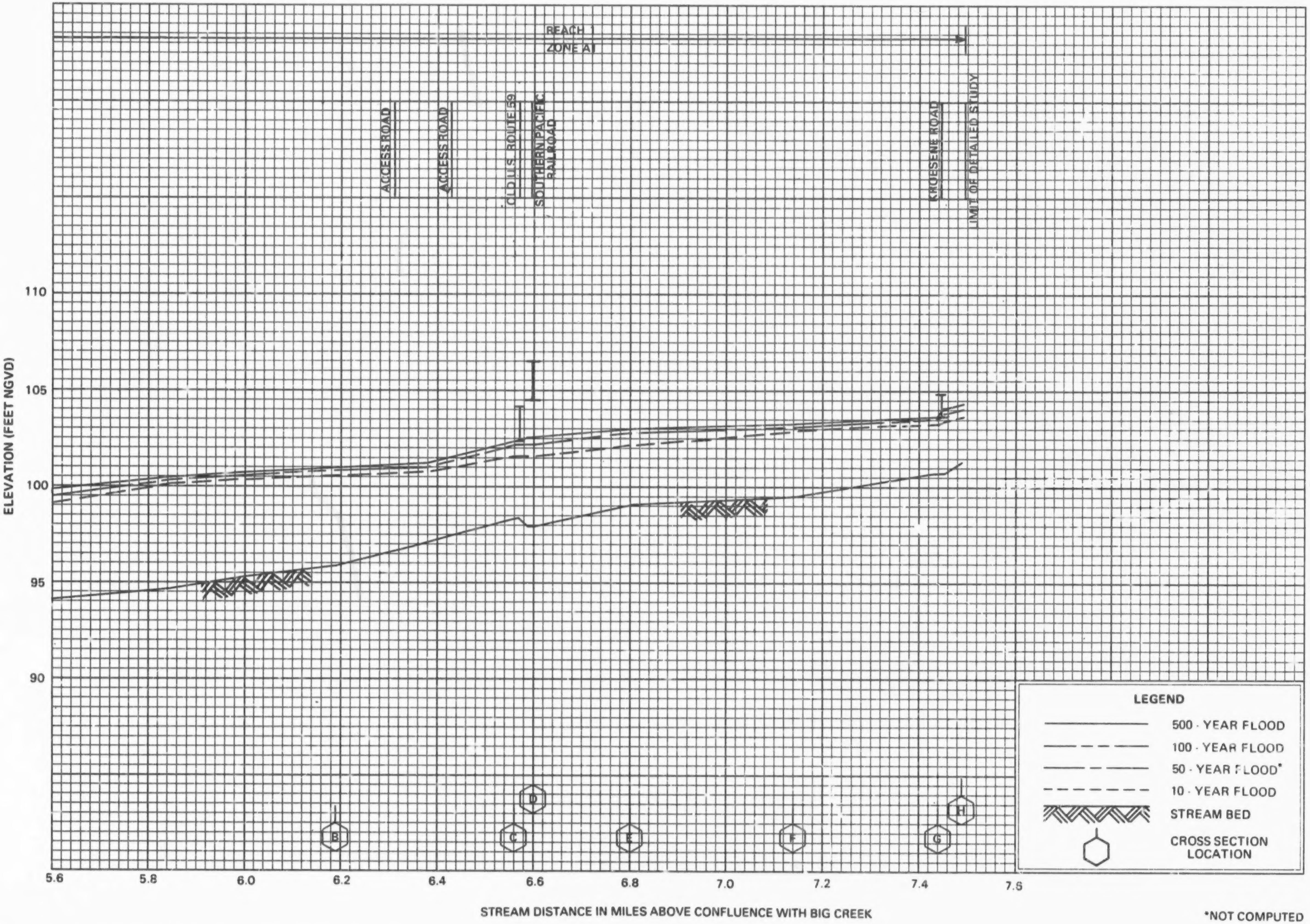
FLOOD PROFILES

SEABOURNE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

74



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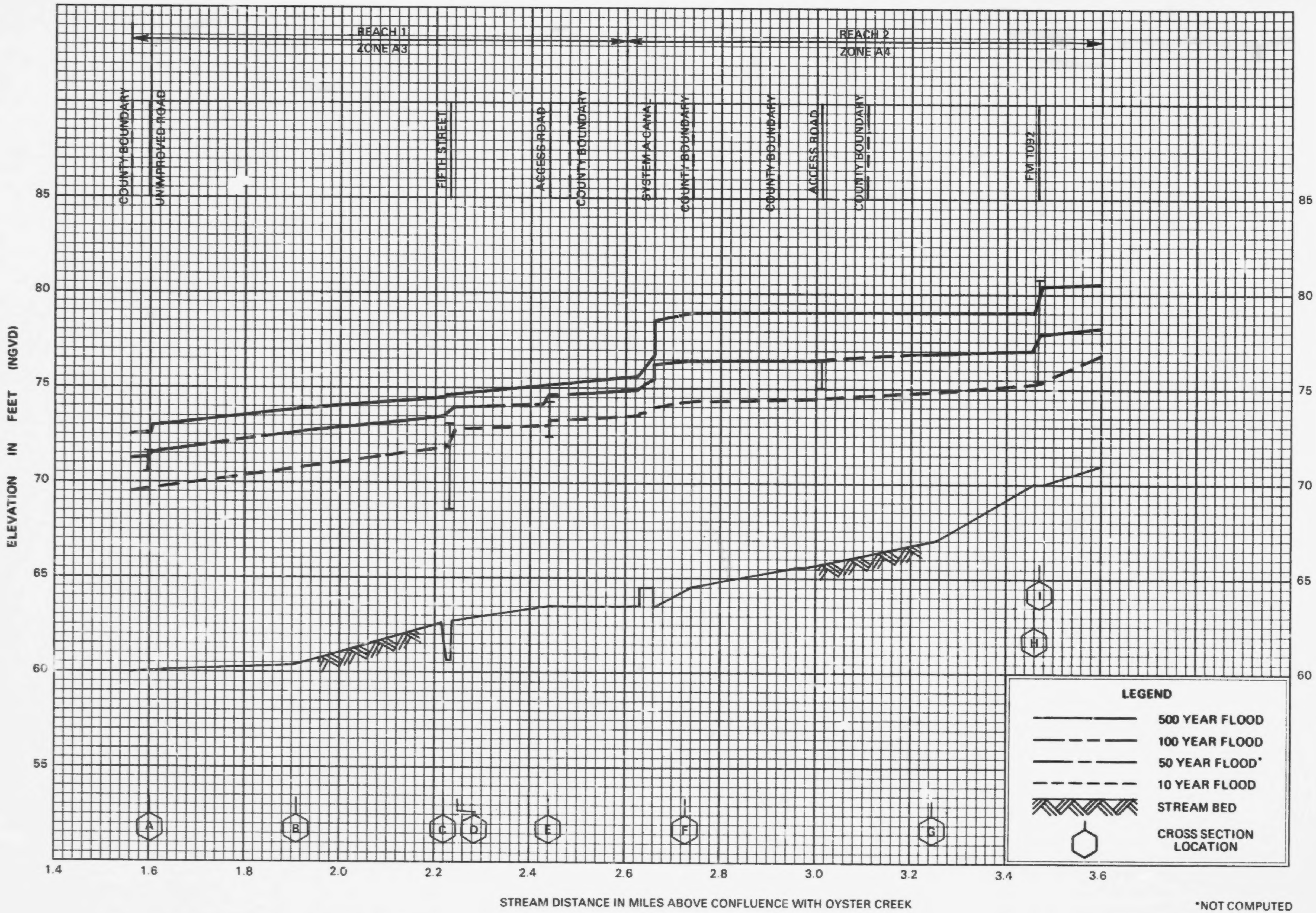
FLOOD PROFILES

SEABOURNE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

30P



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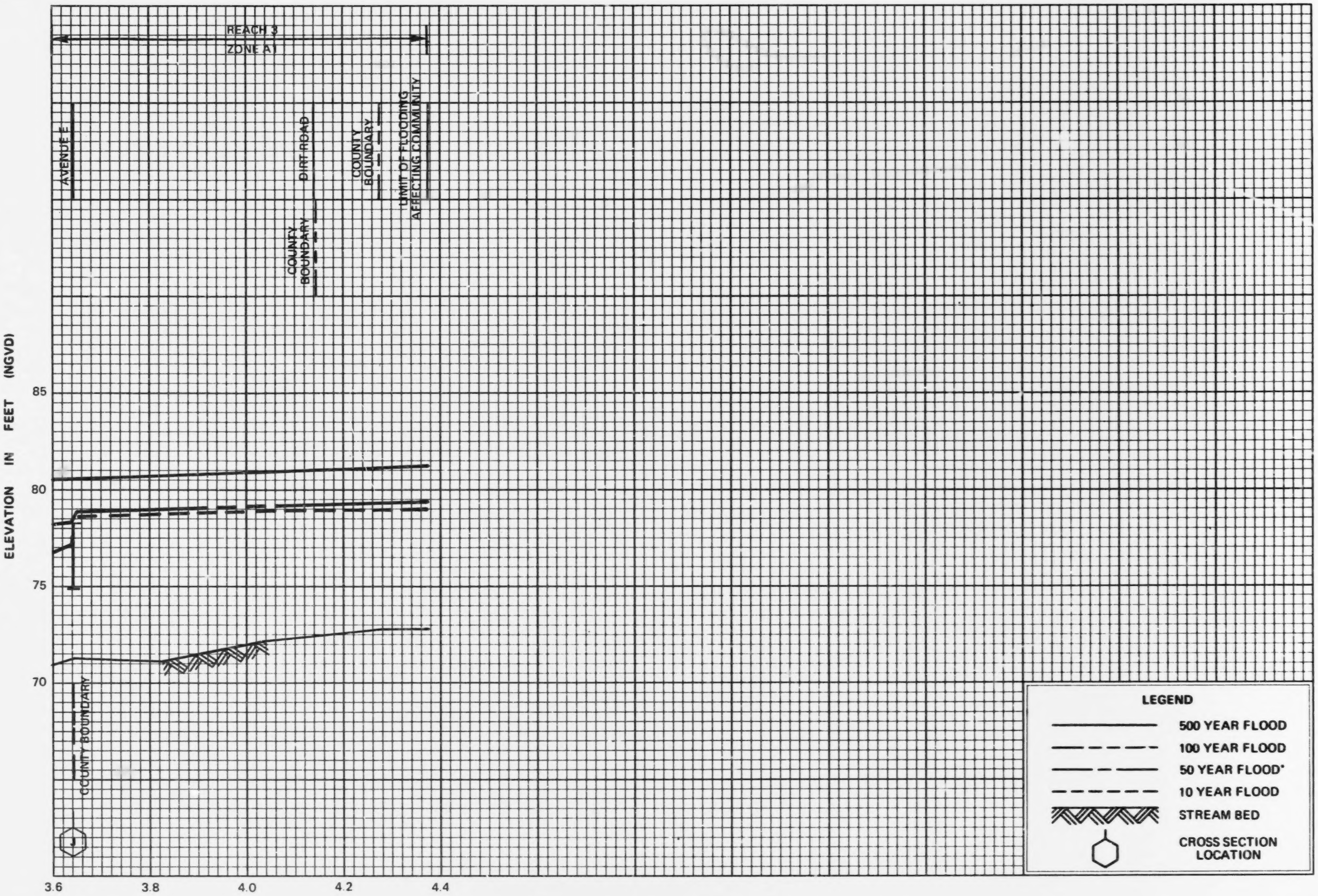
FLOOD PROFILES

STAFFORD RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX



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FLOOD PROFILES

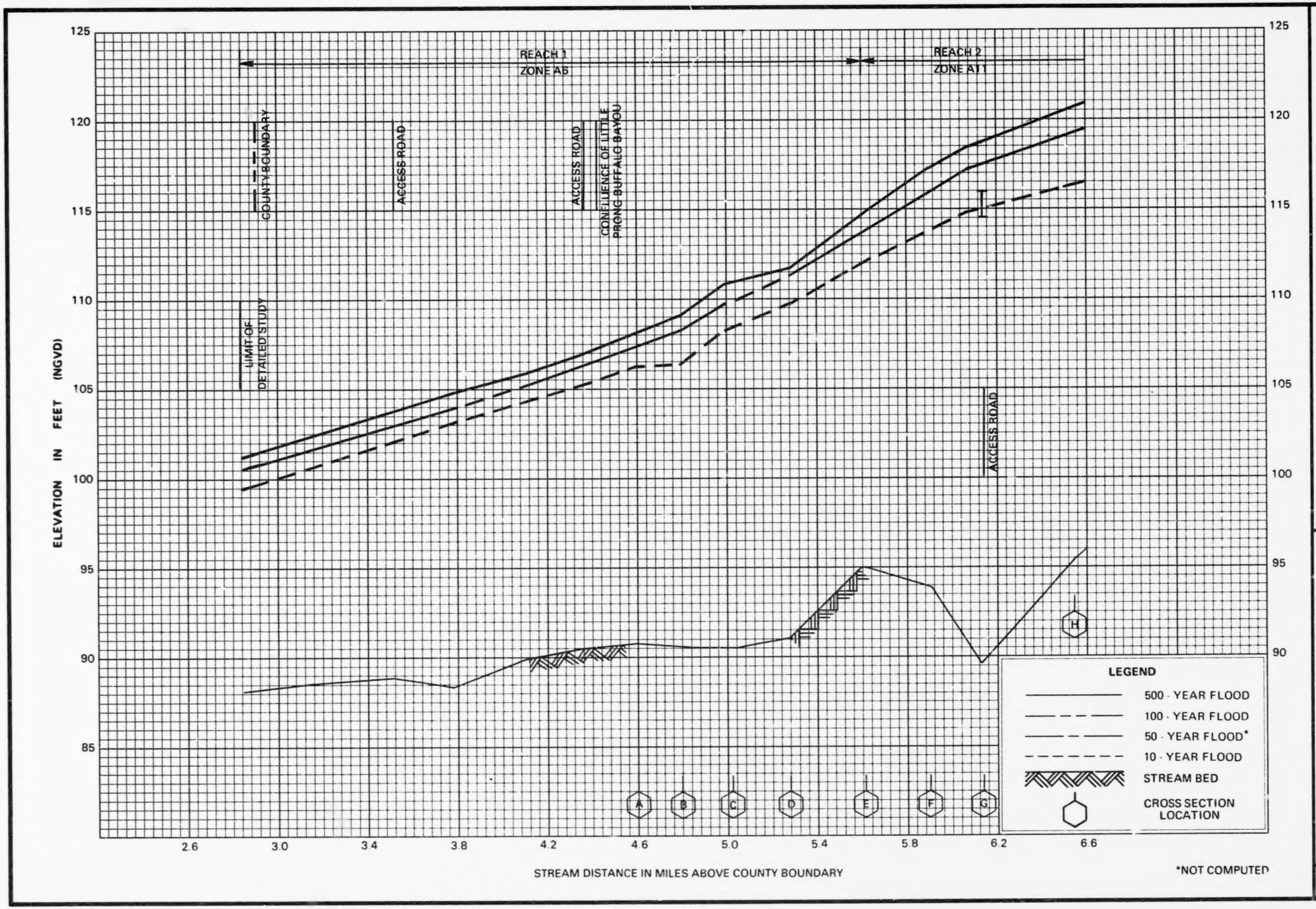
STAFFORD RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

32P

22



FLOOD PROFILES

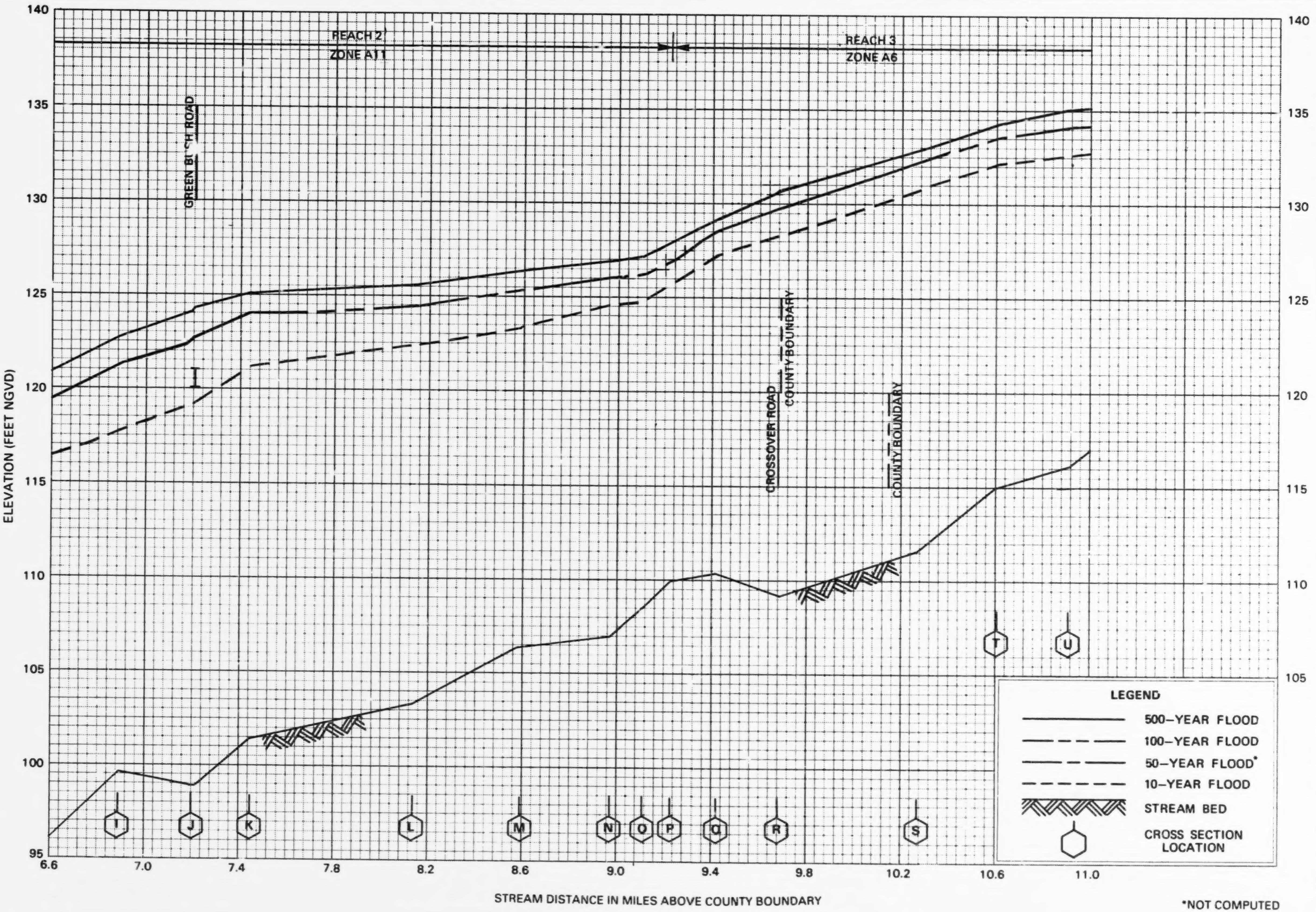
WILLOW FORK BUFFALO BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

33P

28



*NOT COMPUTED

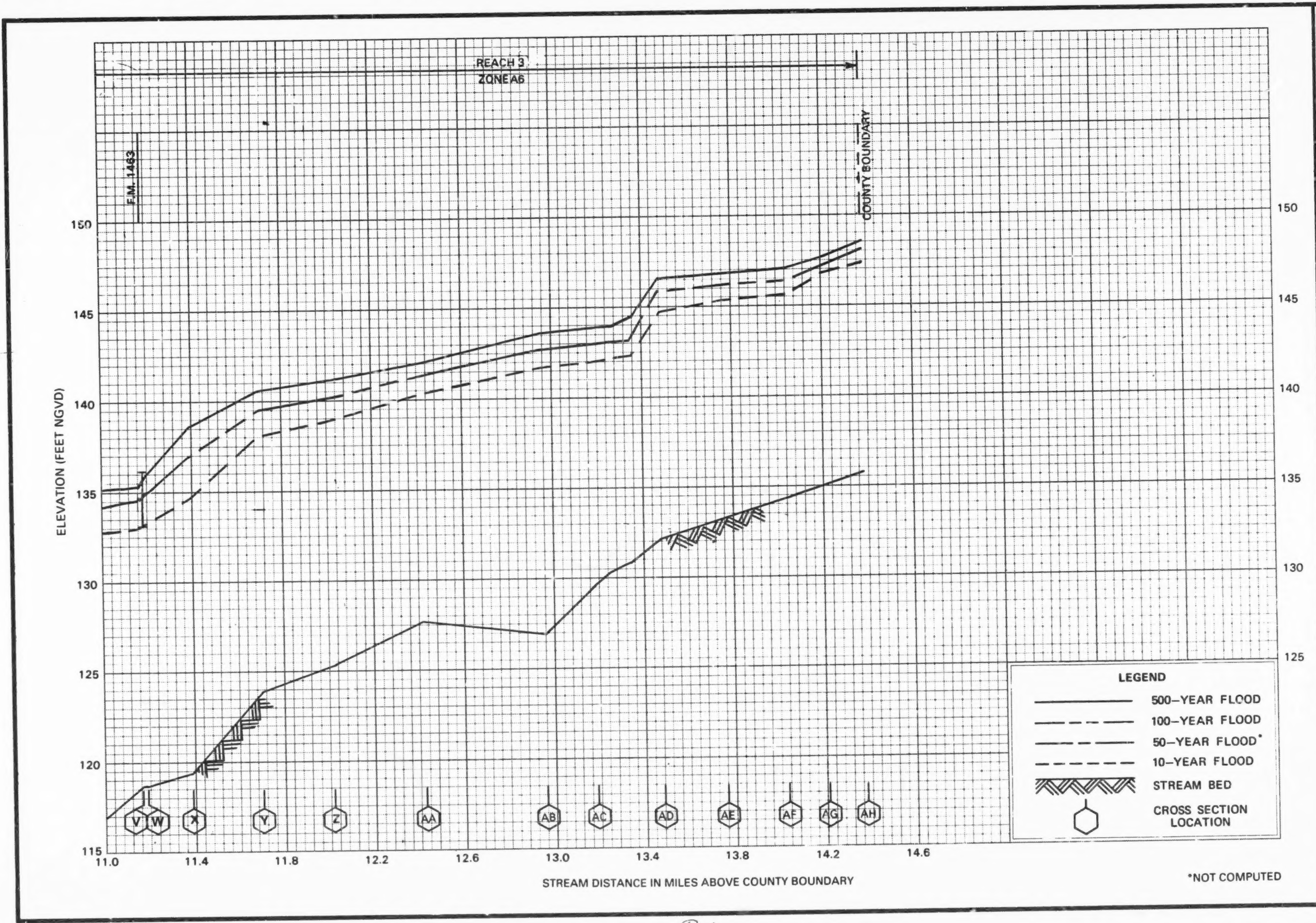
FLOOD PROFILES

WILLOW FORK BUFFALO BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

79



FLOOD PROFILES

WILLOW FORK BUFFALO BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

FORT BEND COUNTY, TX

35P

80